

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF IOWA
CEDAR RAPIDS DIVISION**

PARENTS DEFENDING EDUCATION,

Plaintiff,

v.

LINN-MAR COMMUNITY SCHOOL
DISTRICT; *et al.*,

Defendants.

Case No. 22-cv-78-CJW-MAR

Volume 1

DECLARATION OF JAMES F. HASSON

1. I am an attorney at the law firm Consovoy McCarthy PLLC and counsel for plaintiff Parents Defending Education.

2. I am over the age of eighteen and under no mental disability or impairment. I have personal knowledge of the following facts and, if called as a witness, would competently testify to them.

3. The following materials attached as exhibits are true and accurate copies of documents downloaded from the internet between August 1, 2022 and August 4, 2022:

- a. Attached as Exhibit A is a true and accurate copy of a report by the American Enterprise Institute, entitled *How Schools' Transgender Policies Are Eroding Parents' Rights*. The report was published in March 2022 and is available at <https://bit.ly/3BqL2MO>.
- b. Attached as Exhibit B is a true and accurate copy of a model policy created by GLSEN and the National Center for Transgender Equality, entitled *Model Local Education Policy on Transgender and Non-Binary Students*. The report was published in September 2018 and is available at <https://bit.ly/3PHTyv9>.

- c. Attached as Exhibit C is a true and accurate copy of an article published by Gender Spectrum, entitled *Supporting Gender Expansive Students*. The article is available at <https://bit.ly/3OiB9EC> and was last accessed on July 27, 2022.
- d. Attached as Exhibit D is a study published by the Patient-Centered Outcomes Research Institute, entitled *Examining Health Outcomes for People Who Are Transgender*. The study was published in 2019 and is available at <https://bit.ly/3Iy5RaK>.
- e. Attached as Exhibit E is a true and accurate copy of a study published by the Archives of Sexual Behavior, entitled *The Use of Methodologies in Littman (2018) Is Consistent with the Use of Methodologies in Other Studies Contributing to the Field of Gender Dysphoria Research: Response to Restar (2019)*. The study was published in January 2020 and is available at <https://bit.ly/3bd362o>.
- f. Attached as Exhibit F is a true and accurate copy of a study published in the Journal of Developmental Psychology, entitled *Peer Influence on Gender Identity Development in Adolescence*. The study was published in September 2016 and is available at <https://bit.ly/3OEZGDf>.
- g. Attached as Exhibit G is a true and accurate copy of a study published by Nature Communications, entitled *Elevated Rates of Autism, Other Neurodevelopmental and Psychiatric Diagnoses, and Autistic Traits in Transgender and Gender-Diverse Individuals*. The study was published in August 2020 and is available at <https://bit.ly/3OFWwzd>.
- h. Attached as Exhibit H is a true and accurate copy of an article published by City Journal, entitled *When the State Comes for Your Kids*. The Article was published on June 8, 2021, and is available at <https://bit.ly/3Ni19P1>.
- i. Attached as Exhibit I is a true and accurate copy of Linn-Mar Policy 504.13R, entitled *Administrative Regulations Regarding Transgender and Students Nonconforming to Gender Stereotypes*. The Policy was issued on April 25, 2022, and is available at <https://bit.ly/3czTiQb>.

- j. Attached as Exhibit J is a true and accurate copy of Linn-Mar Policy 504.3, entitled *Administration of Medication to Students*. The policy was issued in October 2014 and is available at <https://bit.ly/3JcyKJV>.
- k. Attached as Exhibit K is a true and accurate copy of Linn-Mar Policy 504.31, entitled *Student Injury or Illness at School*. The policy was issued in August 2021 and is available at <https://bit.ly/3JaEKmh>.
- l. Attached as Exhibit L is a true and accurate copy of Linn-Mar Policy 503.4, entitled *Student Activity Program*. The policy was issued in July 2013 and is available at <https://bit.ly/3Bnc0VK>.
- m. Attached as Exhibit M is a true and accurate copy of a news article published in The Gazette, entitled *Linn-Mar School Board Members Debate Policies to Protect Transgender Students*. The article was published on April 18, 2022, and is available at <https://bit.ly/3OEL6MX>.
- n. Attached as Exhibit N is a true and accurate copy of a news article published in The Gazette, entitled *Transgender Policies Called 'Safest' for Students*. The article was published on April 26, 2022, and is available at <https://bit.ly/3OEL6MX>.
- o. Attached as Exhibit O is a true and accurate copy of a report by the Foundation for Individual Rights in Education (FIRE), entitled *Spotlight on Speech Codes 2021*. The report was issued in 2021 and available at <https://bit.ly/3pdQ09E>.
- p. Attached as Exhibit P is a true and accurate copy of an article published in the Wall Street Journal, entitled *The Progressive Pronoun Police Come for Middle Schoolers*. The article was published on May 23, 2022, and is available at <https://on.wsj.com/3NTV50b>.
- q. Attached as Exhibit Q is a true and accurate copy of Linn-Mar Policy 103.1-R, entitled *Administrative Regulations Regarding Anti-Bullying/Harassment*. The policy was issued in June 2020 and is available at <https://bit.ly/3cMN5Rd>.

- r. Attached as Exhibit R is a true and accurate copy of a news article published by KWWL.com, entitled *Linn-Mar school board approves policy affirming rights for transgender students*. The article was published on April 25, 2022, and is available at <https://bit.ly/3bbzd2p>.
- s. Attached as Exhibit S is a true and accurate copy of an article published in Social Sciences, entitled *Characterizing Parent-Child Interactions in Families of Autistic Children in Late Childhood*. The article was published on February 28, 2022, and is available at <https://bit.ly/3b8UUjA>.
- t. Attached as Exhibit T is a true and accurate copy of an article published by The Family Institute at Northwestern University, entitled *The Importance of Incorporating Siblings in the Treatment of Autism Spectrum Disorder*. The article is available at <https://bit.ly/3zda1kb> (last accessed August 4, 2022).
- u. Attached as Exhibit U is a true and accurate copy of an article in the Journal of LGBT Health, entitled *Gender Dysphoria in Children With Autism Spectrum Disorder*. The article was published in April 2019 and is available at <https://bit.ly/3v1r9mA>.
- v. Attached as Exhibit V is a true and accurate copy of a study published in PLOS One, entitled *Rapid Onset Gender Dysphoria in Adolescents and Young Adults: A Study of Parental Reports*. The study was published on August 16, 2018, and is available at <https://bit.ly/2oQWz1H>.
- w. Attached as Exhibit W is a true and accurate copy of Chapter 10 from a textbook entitled *Pediatric Gender Identity* (Springer Nature Switzerland AG, 2020), published by the Department of Child and Adolescent Psychology, Center of Expertise on Gender Dysphoria at the University of Amsterdam Medical Center. Chapter 10 is entitled *Caring for Transgender and Gender Diverse Youth With Co-occurring Neurodiversity*.

- x. Attached as Exhibit X is a true and accurate copy of a Facebook post published by Linn-Mar School Board member Brittania Morey. The post was published on April 28, 2022, and is available at <https://bit.ly/3OArpop>.
- y. Attached as Exhibit Y is a true and accurate copy of an article published in the Washington Post, entitled *Gender Transitions At School Spur Debates Over When, Or If, Parents Are Told*. The Article was published on July 18, 2022, and is available at <https://wapo.st/3bkEeWt>.

Per 28 U.S.C. §1746, I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on August 5, 2022.

/s/ James F. Hasson
James F. Hasson
Counsel for Plaintiff

EXHIBIT A



How Schools' Transgender Policies Are Eroding Parents' Rights

By Luke Berg

March 2022

Key Points

- Schools have a long-standing tradition and legal obligation to inform parents of their children's medical and behavioral issues and to honor their decisions about what's best for their kids. Yet, prompted by a well-organized lobby, many school districts have decided that minor students can change gender identity at school without any parental involvement.
- A gender identity transition is a major event in a child's life. It can have long-term effects on a child's psyche and sense of identity, and, as a result, many mental health professionals recommend a more cautious approach, first helping children process what they are feeling and why.
- The increasingly common practice of rushing to "affirm" and facilitate a transition at school without informing parents, and even refusing to follow their wishes, runs directly against a strong body of case law recognizing parents' constitutional right to raise their children.
- State lawmakers can and should clarify that school districts must defer to parents when children struggle with gender identity issues.

In the past few years, school districts nationwide have quietly adopted policies requiring staff to facilitate and "affirm" gender identity transitions at school without parental notice or consent—and even in secret from parents. Certain groups are telling school boards and administrators that excluding parents from the decision about whether staff will treat their child as the opposite sex is not only best practice but required by law. Neither is true. Such policies fly in the face of how schools treat every other decision of similar significance.

From a legal perspective, these policies violate parents' constitutional rights to raise their children. They also conflict with science. Many professionals in the field believe that transitioning at a young age

can become self-reinforcing and do long-term harm. And these policies divide children against parents, communicating to kids that their parents' decisions should not be respected.

As parents become aware of these policies, some through personal experience, many are wondering what can be done. Fortunately, parents can raise strong objections with their school boards and administrators, which may persuade them to change course. If that doesn't work, these policies are vulnerable to legal challenge. Finally, there is a relatively simple legislative fix: Lawmakers can, and should, prohibit public schools from taking this major decision out of parents' hands.

The Norm and How It Was Broken

When parents send their children to school, most expect open lines of communication and assume the school will defer to them on any significant decisions. That is, for the most part, the norm. As any parent of school-age kids can attest, schools require parental consent for just about everything, even seemingly insignificant matters: sports, field trips, extracurricular activities, alternate education programs, and taking any kind of medication at school. If something more serious arises during the school day, such as a medical or health-related issue, parents rightfully expect an immediate call before any sort of intervention.

Yet in the past few years, schools nationwide have carved out an exception to this expectation for one major and controversial issue: social gender identity transitions. Unbeknownst to many parents, schools are adopting policies that allow students to change gender identity at school, adopt a new name and pronouns, and even begin using opposite-sex facilities, without parental notice or consent and sometimes in secret from parents. This shift is happening under most parents' radar—until it affects their children, when it's often too late to fight.

In Madison, Wisconsin, for example, where I live and work, the public school district a few years ago posted to its website a 35-page document¹ that included policies allowing students of *any age* to adopt a new “affirmed name and pronouns” at school “regardless of parent/guardian permission,” prohibiting staff from “reveal[ing]” this to parents without the student’s consent and even requiring staff to deceive parents by using the student’s “affirmed name and pronouns” at school while reverting to “their legal name and pronouns with family.”² Another Wisconsin school district recently trained its teachers that parents are “not entitled to know their kids’ identities” and that “this knowledge must be earned.”³ Similar policies are showing up in school districts nationwide, including in Chicago;⁴ Los Angeles;⁵ Milwaukee, Wisconsin;⁶ Montgomery County, Maryland;⁷ New York City;⁸ and Washington, DC.⁹ Even some state education departments have adopted similar policies, including in New Jersey¹⁰ and Virginia.¹¹ This is by

no means a comprehensive survey. And these policies aren’t always written down, as a Wisconsin parent recently discovered.

This trend appears to be driven by a few groups telling school districts that this is the best practice—and even required by law. The Gay, Lesbian, and Straight Education Network (GLSEN), for example, promotes a “model” policy that declares children have the “right” to “be addressed by a name and pronoun that corresponds to [their] gender identity” and “to keep [their] transgender status private at school,” even emphasizing that “it is critical that parental/guardian approval is never a prerequisite for respecting a student’s gender identity, including their chosen name and pronouns.”¹² The Madison School District’s policy credits the GLSEN policy as its starting point. The language in this policy and the other multiple policies listed above mirrors the GLSEN policy.

Similarly, the National Education Association (NEA), with the Human Rights Campaign and the American Civil Liberties Union, in 2015 published a guidance document titled *Schools in Transition*, which states schools should first “ask whether the student’s family is accepting” of a transition before “discussing with the student’s family.”¹³ And if the family does not “support” a transition, the guidance recommends that schools come up with a plan for “how to refer to the student when communicating with the student’s parents”—suggesting that this decision can be made at school without parents’ input or knowledge.

In 2016, the Department of Education under the Obama administration issued a document recommending various “example” policies and “emerging practices for supporting transgender students.” In a section about how schools should communicate with parents, the guidance endorsed policies openly stating that “parental participation is not required” for a transition at school.¹⁴

The logic behind these policies appears to go something like this: Children have a right to “be who they are.” If children say they’re transgender, they really are. The only appropriate response is to affirm their “true” identity, and any other response will harm them. And schools need to protect self-identifying transgender kids from parents who aren’t on board with an immediate transition.

But are these assumptions true? The short answer is no.

Lifelong Implications

The medical science on children with gender dysphoria is not settled. There is currently an ongoing and lively debate in the mental health community about how to best respond when children experience a disconnect between their biological sex and self-perceived gender identity. This debate has been covered much more extensively than is possible in this report in the media and recent books, most notably Abigail Shrier's highly praised book on the subject.¹⁵

While some argue that immediate affirmation of a new identity is the best response, it is certainly not the *only* possible response, nor is it clear that it's even the *right* response in most circumstances.

While some argue that immediate affirmation of a new identity is the best response, it is certainly not the *only* possible response, nor is it clear that it's even the *right* response in most circumstances. Many professionals believe that transitioning and affirming a transition can become self-reinforcing and do long-term harm. Dr. Kenneth Zucker, for example, who for over three decades led one of the world's top clinics for children with gender dysphoria, has written that "parents who support, implement, or encourage a gender social transition (and clinicians who recommend one) are implementing a psychosocial treatment that will increase the odds of long-term persistence."¹⁶

This view, as Dr. Zucker explains elsewhere, is based on the idea that a child's sense of identity is formed by "messages from family, peers, and society."¹⁷ Thus, daily affirmation of an alternate identity by respected adults, such as teachers, reinforces a child's belief that this is actually who he or she is, causing that identity to set in and reducing the chances of learning to find comfort with one's

body. So, instead of immediate affirmation, Dr. Zucker and others recommend first attempting to help children identify the underlying cause of their feelings and hopefully resolve the conflict.

The recent explosion of children dealing with gender identity issues strongly suggests that this is driven largely by social messaging. The UK government, for example, recently reported a "4,400 per cent increase in girls being referred for transitioning treatment in the past decade."¹⁸ Canadian clinics have also seen "exponential growth in demand."¹⁹ In the United States, providers are also "reporting large upticks in new referrals," though "solid numbers are harder to come by."²⁰ A recent study documented a phenomenon it called "rapid onset gender dysphoria," in which multiple adolescents in a social group (often teenage girls) decide they are transgender in a short period.²¹

The research we have at this point supports that these feelings eventually go away for most children. Multiple follow-up studies have assessed the degree to which childhood gender dysphoria "persists," and they consistently find that the vast majority (70–90 percent) of children who struggle with this ultimately revert to identifying with their biological sex (that is, if they do not transition).²² Even among adults, there are a growing number of "detransitioners," proof alone that one's self-perception at a given time does not necessarily predict how one will feel later in life.²³

It should go without saying, but the best outcome is for children to learn to embrace the body they were born with. A life at war with one's body comes with many challenges. It is not physically possible to change sex. The surgeries that attempt to imitate a body of the opposite sex are well-known to be sterilizing and to bring other complications. Studies have also found significantly worse mental health outcomes in the transgender population, even among those who have transitioned. One of the most robust long-term studies in this area found that a group of 324 Swedish individuals who had fully transitioned (including sex-reassignment surgery) were still 19.1 times more likely to commit suicide than was the general population over an extended period.²⁴

Transitioning at a young age poses special risks and complications. A social transition prepuberty can result in significant awkwardness when puberty

arrives. The affirming crowd promotes puberty blockers and cross-sex hormones as a solution to this problem, but these can have irreversible effects on fertility and sexual response. It can also be particularly hard for school-age children to transition back if their feelings change. In one survey, students reported strong “fear of teasing and shame to admit they had been ‘wrong,’ result[ing] in a prolonged period of distress.”²⁵

In light of the long-term implications and the risk that an early transition will set a child down a path to that end, many experts view a social transition as a significant psychotherapeutic intervention. A well-known expert, Dr. Stephen Levine, in an affidavit for a case on this topic that I am litigating, summarizes as follows:

Therapy for young children that encourages transition cannot be considered to be neutral, but instead is an experimental procedure that has a high likelihood of changing the life path of the child, with highly unpredictable effects on mental and physical health, suicidality, and life expectancy.²⁶

Thus, when school staff affirm a minor student’s feelings that they are “really” a different gender, they are effectively making a *medical* decision for that child in place of the parents.

Even the World Professional Association for Transgender Health (WPATH) agrees that childhood gender identity transitions are “controversial.” For those unfamiliar, WPATH is an advocacy organization that publishes a set of guidelines for transgender care. It is not a neutral organization; it strongly advocates for an affirming approach. Yet, it openly acknowledges that health professionals have “divergent views” about childhood transitions and recognizes the lack of evidence at this point “to predict the long-term outcomes of completing a gender role transition during early childhood.”²⁷

In the end, and in direct conflict with the school policies described above, WPATH encourages health professionals to *defer to parents* “as they work through the options and implications,” even if they “do not allow their young child to make a gender-role transition.”²⁸ And this is a recommendation from an *advocacy* organization to health care *professionals*. How much more of a reason do teachers and school administrators, who have no

expertise whatsoever in these matters, need to defer to parents?

A Slender Reed

If even WPATH recommends deferring to parents, what are schools’ justifications for excluding parents from this decision (aside from ideological conviction or fear of bad press from special interest groups)? And do the justifications offered stand up to scrutiny?

The primary argument appears to be that children have a “right” to make this decision on their own. But this flies in the face of the traditional parent-child relationship. As the Supreme Court has explained, “Our jurisprudence historically has reflected Western civilization concepts of the family as a unit with broad parental authority over minor children.”²⁹ Or, in another case: “Th[e] primary role of the parents in the upbringing of their children is now established beyond debate as an enduring American tradition.”³⁰ Parental authority is based on the commonsense recognition that “parents possess what a child lacks in maturity, experience, and capacity for judgment required for making life’s difficult decisions.”³¹ Thus, a minor’s disagreement with a parent’s decision does “not diminish the parents’ authority to decide what is best for the child.”³² And government officials, including teachers and school administrators, generally cannot override or even “review such parental decisions.”³³

While the Court has recognized that minors have some limited rights that supersede their parents’ objection (most notably, to get an abortion), the lead opinion in one of those cases emphasized that, generally, “the constitutional rights of children cannot be equated with those of adults,” due to their “inability to make critical decisions in an informed, mature manner” and the “importance of the parental role in child rearing.”³⁴ Thus, “Parental notice and consent are qualifications that typically may be imposed . . . on a minor’s right to make important decisions.”³⁵

That is not to say that minors should have no say in this decision. Part of good parenting is helping your children learn to make good decisions on their own. But parenting also sometimes requires saying no, sometimes even to protect children from themselves. The question of *when* children

are ready to decide for themselves whether to take on a different gender identity is not easy (and the answer probably differs for each child), but that is ultimately a decision for the parents to make, not for schools to preempt.

A recent example, from a family in the Kettle Moraine School District in Wisconsin, illustrates this point. Their 12-year-old daughter began struggling with some mental health issues and became convinced rather abruptly that she was transgender. After this was promptly affirmed by a mental health provider, she told school staff that she wanted to socially transition to a male name and pronouns at school. But her parents decided that *immediately* transitioning would not be best for her—they wanted her to take time to be sure—and communicated this to her and her school. But the school refused to respect the parents’ decision, forcing them to withdraw their daughter from public school and search for a private school. After an extended absence from any messages of affirmation, their daughter changed her mind, agreeing that her parents were right to put the brakes on a transition. She later expressed to her mother that “affirmative care really messed me up.”

Another main argument in support of these policies is protecting students’ right to privacy, often invoking the Family Educational Rights and Privacy Act (FERPA) in support.³⁶ But minors do not generally have a right to privacy vis-à-vis *their parents*. As *Wyatt v. Fletcher* states, “There is no clearly established law holding that a student in a public secondary school has a privacy right . . . that precludes school officials from discussing *with a parent* the student’s private matters.”³⁷

FERPA does not provide such a right either. If anything, FERPA supports parents’ role. That law generally gives parents full access to their children’s education records.³⁸ And under the implementing regulations, only *parents* (or students over age 18) can request to change education records, including a name-change request.³⁹ In other words, these policies frequently come close to *violating* FERPA. Some certainly do. The Madison School District’s policy, for example, directs teachers to keep a form recording a student’s new “affirmed name and pronouns” out of student records, so that parents can’t access it.

Another common argument is that these policies are necessary to protect transgender kids from parents who might not support affirmation. This rationale *assumes* that anything short of immediate affirmation is inherently abusive. But that is not remotely true, much less universally accepted; as explained above, many professionals believe *affirmation* is actually harmful. Regardless of who is right, courts have long recognized that the government “has no interest in protecting children from their parents unless it has some definite and articulable evidence giving rise to a reasonable suspicion that a child has been abused or is in imminent danger of abuse.”⁴⁰ And even when the risk from parents rises to that level, parents are entitled to significant due process protections before the state can override their decisions.⁴¹

Parents are entitled to significant due process protections before the state can override their decisions.

Finally, some argue that adopting a new name and pronouns is no big deal; it’s just like a nickname, and it allows students to explore their identity. Experts disagree. Daily affirmation by authority figures—consistently treating a child as if he or she is actually the opposite sex—can profoundly affect a child’s psyche and sense of identity.

Reasserting Parental Authority

So what can be done? First, parents should be actively engaged in their schools and push back against any policies like this, at school board meetings and wherever else they can. And parents should get involved even if their kids aren’t presently dealing with this. Many parents whose kids struggle with gender dysphoria don’t see it coming, and by then, it’s often too late to fight such policies. This may seem obvious and overly simplistic, but I believe many school boards are simply being duped by groups like GLSEN and the NEA that excluding parents from this issue is the accepted “best” practice to support transgender students. It may not always be policy extremism driving these policies;

school leaders may be hearing from only one side. If no one says otherwise, school boards may not be aware of the debate and risks associated with teachers affirming a transition or the legal arguments against such a policy. But if parents show up armed with accurate information, schools boards might reconsider.

This has already happened in Wisconsin. The Kenosha School District recently considered a policy that, like Madison's and others, would allow students to choose a new name and pronouns at school without parental consent.⁴² But it ultimately rejected that part of the policy, after considering the lawsuit we filed against the Madison School District calling attention to this issue.⁴³ One student's father who is running for the school board said in a speech to the board that it was "important" to "stop and ponder" court decisions that "recogniz[e] that parents are the primary decision makers with respect to their children."⁴⁴

Even if political pressure fails, these policies are vulnerable to lawsuits. As discussed briefly above, a long line of cases from the United States Supreme Court holds that parents have a fundamental right, under the 14th Amendment, to "direct the upbringing and education of children under their control."⁴⁵ This is "perhaps the oldest of the fundamental liberty interests recognized by" the Court.⁴⁶ A similar right may also be protected by state constitutions, as in Wisconsin. These cases emphatically reject as "statist" and "repugnant to American tradition" one of the major premises of these policies—the "notion that governmental power should supersede parental authority" because school officials know better than parents.⁴⁷

Most of these cases do not involve schools excluding parents from a major decision affecting their child—primarily because schools generally don't do this—but one case out of the US Court of Appeals for the Third Circuit stands out. In *Gruenke v. Seip*, a high school swim coach suspected a team member was pregnant, but instead of notifying her parents, the coach discussed it with others and eventually pressured the team member to take a pregnancy test. The mother sued, arguing that by failing to promptly notify and defer to her, the coach violated her "parental right to choose the proper method of resolution." The court condemned this "arrogation of the parental

role": "It is not educators, but parents who have primary rights in the upbringing of children. School officials have only a secondary responsibility and must respect these rights."⁴⁸

The Wisconsin Institute for Law & Liberty,⁴⁹ in partnership with Alliance Defending Freedom, has brought two lawsuits challenging such policies as a violation of parents' constitutional rights, one against the Madison School District⁵⁰ and another against the Kettle Moraine School District.⁵¹ These cases are still in the early stages, so there is no definitive ruling on the merits yet, but they have already won a partial injunction against the Madison School District that prevents staff from lying to or deceiving parents about the name and pronouns their children are using at school. The Wisconsin Supreme Court recently granted review of the Madison case to decide whether that injunction went far enough; the argument is set for April 12, 2022.⁵² That an injunction against intentional deception is even necessary says something about where we are. Other groups have brought similar lawsuits in California,⁵³ Florida (two cases),⁵⁴ Maryland,⁵⁵ and Virginia.⁵⁶ These cases provide a template that others can follow to challenge policies like this.

One problem with both litigation and political pressure, however, is that these policies aren't always written down. School boards, administrators, and their lawyers might discuss this scenario internally and reach a position without parents' awareness or any opportunity for input. In the Kettle Moraine School District, for example, there was no written policy; the parents only learned that the school would not respect their decision in the middle of the crisis, leaving them no short-term option but to withdraw their daughter from the school. When school districts make such weighty decisions without committing them to writing, it short-circuits parents' ability to hold them accountable.

In light of this, the best solution may be legislative. It would not be hard to craft a simple bill requiring parental permission before minor students can change their gender identity at school. The focus of such a bill should be on teachers and staff and how they address students. It could read something like this:

School teachers and staff, while at school, may not knowingly address a minor student using a name and pronouns at odds

with the student's biological sex, or allow minor students to use opposite sex bathrooms and locker rooms, without written permission from a parent or legal guardian.

This could even be included as part of a package of parents' rights in education. The Wisconsin Legislature, on March 8, 2022, passed a parents' rights bill codifying various rights of parents, including the right to "determine the names and pronouns used for the child while at school." (The bill now goes to the governor.)⁵⁷

To be clear, such a bill would not, as some will likely argue, *require* teachers to immediately "out" to parents any student who has questions about these issues and confides in a teacher (though teachers must be *permitted* to communicate openly with parents about this, because this can be a serious mental health issue). But if a student wants to take the major step to transition, asking all teachers and staff to treat him or her as the opposite sex while at school, *that* should require parental permission, just as taking medication at school does, because—as noted above—social affirmation is a medical intervention. Teachers can still be a safe space for students to process these issues while gently explaining to students who want to transition that this is a big decision and that they need to

involve their parents if they want to do so at school with the support of staff.

No parents should go through what Jay Keck⁵⁸ went through, suddenly discovering one day that his daughter had changed gender identity at school, with the school's active participation and affirmation but without any notice to him. No parents should go through what the Kettle Moraine parents went through, being forced to withdraw their daughter from public school just to protect her and preserve their parental role.

A bill to prevent this should find broad support among parents and constituents. Most parents are outraged when they learn that school districts are excluding parents from this major decision. Even parents who ultimately would allow an immediate transition should want and expect to be involved. Those who support these policies should be forced to defend them publicly and explain why they believe it's ever appropriate to hide such a serious issue from parents or to subvert the parents' decision about what's best for their child. These policies have been implemented quietly for a reason. A public debate that brings them to light may be all that's needed to start eliminating them.

About the Author

Luke Berg works as a deputy counsel at the Wisconsin Institute for Law & Liberty. He previously served as a deputy solicitor general and assistant attorney general at the Wisconsin Department of Justice.

Notes

1. Madison Metropolitan School District, "Guidance & Policies to Support Transgender, Non-Binary, and Gender-Expansive Students," April 2018, <https://www.madison.k12.wi.us/student-staff-support/lgbtq/guidance-policies-to-support-transgender-non-binary-and-gender-expansive-students>.
2. Madison Metropolitan School District, "Guidance & Policies to Support Transgender, Non-Binary, and Gender-Expansive Students," 9–18.
3. M. D. Kittle, "Wisconsin School District: Parents Are Not 'Entitled to Know' If Their Kids Are Trans," *Federalist*, March 8, 2022, <https://thefederalist.com/2022/03/08/wisconsin-school-district-parents-are-not-entitled-to-know-if-their-kids-are-trans/>.
4. Chicago Public Schools, "Guidelines Regarding the Support of Transgender and Gender Nonconforming Students," July 2019, 4–5, https://www.cps.edu/globalassets/cps-pages/services-and-supports/health-and-wellness/healthy-cps/healthy-environment/lgbtq-supportive-environments/guidelines_regarding_supportoftransgenderand-gender_nonconforming_students_july_2019.pdf.
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EXHIBIT B



MODEL LOCAL EDUCATION AGENCY POLICY ON TRANSGENDER AND NONBINARY STUDENTS

REVISED OCTOBER 2020

Model Language and Commentary

GLSEN[®]



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Introduction

Transgender and nonbinary students have been a part of our schools and education system for decades. However, for many educators and administrators, awareness of the unique needs of these students represents new and sometimes confusing issues to consider. Together through this document, GLSEN and NCTE, are here to assist, to ensure that all students have a safe and welcoming educational environment.

This model local education agency (LEA), often named school districts, policy is intended to serve as a resource to LEAs on how best to meet the needs of transgender and nonbinary students. This set of recommendations was developed by examining LEA policies from around the country. These recommendations were also informed by examining federal and state policy frameworks.

While this document provides a starting place to create policies on the treatment of transgender and nonbinary students, the strongest policies are developed in consultation with communities that can best inform local needs and priorities. Convening a task force of internal and external stakeholders is one strategy that can yield this type of important information that will ultimately make schools safer, affirming, and more inclusive for transgender and nonbinary students, particularly those who are also Black, brown, Latinx, Indigenous, and/or people with disabilities, who should have the same access to a quality education as their peers.

GLSEN is a national education non-profit organization, leading the movement to create safe and inclusive K-12 schools for all since 1990. We work tirelessly to ensure that all children can have a high quality education where they feel safe and affirmed. We envision a world in which every child learns to respect and accept all people, regardless of sexual orientation, gender identity, and/or gender expression, and in turn is respected and accepted themselves.

The **National Center for Transgender Equality (NCTE)** is a national social justice organization devoted to ending discrimination and violence against transgender people through education and advocacy on national issues of importance to transgender people. By empowering transgender people and our allies to educate and influence policymakers and others, NCTE facilitates a strong and clear voice for transgender equality in our nation's capital and around the country.

Model LEA School Board Policies

A. Nondiscrimination Policies

POLICY:

CONSIDERATIONS UNDER FEDERAL AND STATE LAWS

FEDERAL LAW

Title IX is the federal education law that protects students from discrimination based on sex. In June 2020, the Supreme Court ruled (in *Bostock v. Clayton County, Georgia*) that discrimination on the basis of sex “inherently” includes discrimination based on sexual orientation or transgender status. Numerous courts have also held that, under this ruling, transgender students are protected from discrimination under Title IX and the Equal Protection Clause of the U.S. Constitution.

Some, though not all, transgender students may have additional rights under Individuals with Disabilities Education Act (IDEA) and Section 504 of the Rehabilitation Act, based on a diagnosis of gender dysphoria or related conditions such as anxiety or depressive disorders. These students may be entitled to Individualized Education Plans (IEPs) that address their gender-related needs.

As explained in guidance from the U.S. Department of Education, the Equal Access Act “requires public secondary schools to treat all student-initiated groups equally, regardless of the religious, political, philosophical, or other subject matters discussed at their meetings. Its protections apply to groups that address issues relating to LGBT students and matters involving sexual orientation and gender identity, just as they apply to religious and other student groups.” Under the Act, schools must treat student groups equally, and may not single out a group such as GSAs (Gay Straight Alliances or Gender and Sexuality Alliances) for limitations not imposed on other student groups.

STATE LAW

Many states, territories, and the District of Columbia have laws that explicitly prohibit discrimination in education on the basis of gender identity and expression. In these states, many elements of this model policy may be explicitly incorporated in policies or regulations implementing these state laws. Consistent with these laws, a number of states have developed guidance documents for school districts pertaining to transgender and nonbinary students. Regardless of whether state laws explicitly address gender identity and expression, transgender and nonbinary students are protected under Title IX and state sex discrimination laws and may also be protected under state laws regarding disability discrimination. School districts should adopt explicit nondiscrimination and anti-bullying policies to help ensure acceptance, respect, and safety for all students and compliance with all federal and state laws. The policy language included here regarding bullying, harassment,

and discrimination is not comprehensive, and districts are encouraged to consult GLSEN's Model District Anti-Bullying and Harassment Policy for more comprehensive recommended policy language.

IMPLEMENTATION AND NOTES:

This landmark *Bostock* decision is a powerful tool for changing education environments, both at K-12 schools and in higher education, for the better by removing those barriers that are impeding LGBTQ+ students and educators from being safe and affirmed in schools and college campuses across the country. Historically, federal, state, and local policies have allowed for or even required discrimination against LGBTQ+ students, educators, faculty, and staff, and created environments where they are not safe to learn or safe to work. When students are not safe at school, they are denied an education; and when educators do not feel safe at school, they cannot do their jobs. Learning environments should be places of liberation, where every educator can teach and every student can thrive and reach their full potential, regardless of their sexual orientation, gender identity, race, sex, religion, language, disability, immigration, or economic status.

B. Privacy and Confidentiality

POLICY:

The Family Education Rights Privacy Act (FERPA) is a federal law which applies to all aspects of a student's identity, including their gender identity and transgender status (20 U.S.C. § 1232g; 34 CFR Part 99). Under FERPA, only those school employees with a "legitimate educational interest," the student, or their parent or guardian, may have access to a student's records, including the records of transgender and nonbinary students.

[The local education agency] shall ensure that all personally identifiable and medical information relating to transgender and nonbinary students is kept confidential in accordance with applicable state, local, and federal privacy laws. Staff or educators shall not disclose any information that may reveal a student's gender identity to others, including parents or guardians and other staff, unless the student has authorized such disclosure, the information is contained in school records requested by a parent or guardian, or there is another compelling need. This disclosure must be discussed with the student, prior to any action.

Prior to disclosing any such information about a transgender or nonbinary student, educators and staff should work with the student to discuss the manner, time, and message of this disclosure. This should include providing the student with any support services they may need to make the disclosure in a safe and supportive environment.

Transgender and nonbinary students have the right to discuss and express their gender identity openly and to decide when, with whom, and how much to share private information. The fact that a student chooses to use a different name, to transition at school, or to disclose their gender identity to staff, educators, or other students does not authorize school staff to disclose a student's personally identifiable or medical information to anyone.

IMPLEMENTATION AND NOTES:

Whether or not information is in a student's official records, courts have held that students have a constitutional right to privacy concerning their sexual orientation, transgender status, or gender identity. The process of coming out and transitioning is highly personal, and thus, disclosure and privacy are important considerations. For example, a student may come out to only one educator, but ask that they not yet change how they are addressed in the classroom (e.g., name or pronouns). Others may come to an administrator and ask for this information to be shared with teachers and peers. In addition, for some students, this may represent a matter of safety and wellbeing at home. Students may not be ready for their parents or guardians to know about their gender identity or expression, or that they are expressing their affirmed gender in school. Before contacting the parent or guardian of a transgender or nonbinary student, school staff should clarify with the student whether to use their gender affirming name and the pronouns that correspond to their gender identity, or whether to use their legal name when corresponding with a parent/guardian. See *Nguon v. Wolf*, 517 F.Supp 2d 1177 (C.D. Cal. 2007) (finding that a student has a constitutional right to privacy with regards to a school disclosing information about that student's identity to their parent or guardian). Therefore, disclosure should be driven by the needs and safety of the transgender or nonbinary student, with an emphasis on privacy.

Administrators should consider creating a private and confidential support plan, in collaboration with the transgender or nonbinary student. This teamwork is essential to building trust and clear expectations of needs for the student. Questions to consider when developing this plan:

- Who is the student out to already? Family, guardians, friends, others?
- Does the student feel safe at school? At home?
- What needs does the student have for support?
- With whom does the student feel most comfortable discussing these matters?
- Does the student want to be out to others in the school?
- How and when would the student like to come out to their peers, teachers, and/or family?

The student support plan should address when and how to share information with family members and others, recognizing that students' situations differ and some students may fear negative consequences from being outed before they are ready.

C. Media and Public Communications

POLICY:

Inter-District Communications (staff, students, and families)

When communicating to the media or community about issues related to gender identity or expression, the school or LEA shall have a single spokesperson to address the issue. Rather than directly commenting on the issue, other LEA and school staff shall direct parents/guardians and the media to the designated spokesperson. Protecting the privacy of all students, including transgender and nonbinary students, must be a top priority for the spokesperson and all staff, and all personally identifiable and medical information shall be kept strictly confidential, in accordance with state and federal privacy laws that include public records laws.

Outside District Communications (media)

Schools and districts may receive requests for information about transgender students or policies. These types of inquiries can occur when local media learns about a student transitioning or adoption of a policy regarding transgender and nonbinary students. In such cases, it is important that school and district staff respond appropriately in order to avoid undue and potentially harmful attention to individual students.

IMPLEMENTATION AND NOTES:

Organizations such as GLSEN and NCTE can provide assistance to advocates and school staff dealing with this type of media scrutiny. In general, if the school or LEA chooses to respond to press inquiries regarding how the LEA supports transgender and nonbinary students, a designated spokesperson should provide information and talking points regarding the issue for use with the media. Schools and LEAs should not disclose the identity or personal information of individual students publicly. To ensure the privacy of all students, the school or LEA should avoid raising issues relating to specific students through public hearings or communication to the media or community. Schools and LEAs should take care to never make a statement that causes harm, but allow for students and supportive families to drive what the communications plan, if any, should be.

D. Names, Parent/Guardian Notification, School Records, and Pronouns

POLICY:

All students have the right to be addressed by a name, pronouns, and other terms that correspond to their gender identity. This foundational respect should not rely on whether a student has access to a legal name change or gender marker change on official documents. Educators, staff, and peers, should always use the pronoun and name with which a student identifies or requests.

Educators, staff, and peers are expected to respect a student's name and pronouns, once they have been made aware of said student's correct information.

Medical information, recognition, or documentation are not required to change a student's gender marker or name in the student database/information system.

When requested by the student and their parent/guardian, a transgender or nonbinary student's name should be changed in the Student Database/Information System to reflect their affirmed gender.

If a student has not disclosed their gender identity to a parent/guardian, and as a result the database/information system information cannot be changed, their affirmed name shall be noted as a "preferred name" in the system. This affirmed name should be used by staff and peers, according to the transgender or nonbinary student's wishes. Attendance rosters and ID cards should reflect the student's wishes with regards to name and/or gender marker/pronouns, regardless of the database/information system. The legal name should be used only where specifically required. Districts and schools should determine which uses require the legal name, including whether it is required for specific testing or reporting purposes.

Students may, upon request, have a diploma and course records reissued with a name change after graduation.

A student's gender should not be listed on school ID cards, permission forms, program application forms, or other forms, publications, or documents except where necessary due to state or federal law, regulation, or other requirements.

IMPLEMENTATION AND NOTES:

CONSIDERATIONS FOR NAMES

Misgendering (referring to a transgender or nonbinary person using a word, especially a pronoun, that does not correctly reflect their gender identity) and "deadnaming" (using a student's prior name that does not reflect their identity) in school is a major fear and concern for transgender and nonbinary students. Having a policy that clearly affirms a student's right to use the name and pronouns that are consistent with their gender identity is essential for the health and safety of the student. While mistakes happen, it is important for staff, faculty, and peers to make every effort to correct mistakes, ensure they are not repeated, and address any intentional misuse of a student's name or pronouns.

The process and cost by which a student changes their legal name and the gender on official documents marker varies by state. Some states have fees and processes which make it difficult, if not impossible, to change these documents. Thus, requiring such documentation creates an unnecessary and prohibitive barrier for transgender and nonbinary students. Schools and LEAs should make affirming changes to names and gender markers when requested, regardless of documentation.

CONSIDERATIONS FOR PARENT/GUARDIAN NOTIFICATION

Some transgender and nonbinary students may not yet be out to their parents or guardians. As previously stated, it is essential to have open communication and plans established with the student to go over potential circumstances. For instance, mail may be sent home with a student's prior and/or legal name, which may not be their affirmed name. If a student is not yet out to their parent(s)/guardian(s), using their prior name in

correspondence may be the desirable course of action, although they use a different name amongst peers and educators in school. Educators and staff should work closely with the student to determine what changes are necessary, and where, to ensure their safety and well being.

CONSIDERATIONS FOR SCHOOL RECORDS

In some circumstances, school administrators may be specifically required by law to record a student's name or gender as it appears on documents such as a birth certificate. In those instances, school staff and administrators should record this information in a separate, confidential file to avoid the inadvertent disclosure of the information.

All records that are not specifically required by law to match government-issued documents should be updated when requested by the student. Where there is no state law governing specific types of records, schools should work alongside the student and parent/guardian to ensure documentation is correct and affirming.

School administrators should also assess which records, forms, or documents are and are not required to list gender, and avoid listing gender in cases where it is not needed. For example, some state laws require gender be listed on student transcripts, while others do not. Commercial vendors of student information systems, career and college readiness tools, or other software systems may also require gender to be listed on a few key forms. Confidential and voluntary questions about gender and other demographics may be critical for student surveys, such as school climate surveys. Other forms and documents, such as student ID cards, permission or consent forms (such as for field trips, counseling, medication, or release of records), free or reduced lunch application forms, application or wait list forms for various school programs, medical or counseling consent forms, typically need not and should not list a student's gender.

CONSIDERATIONS FOR PRONOUNS

Pronouns should never be assumed for any student. Educators and staff should ask all students what pronouns they use, and have a place to document that information in class rosters, databases, etc.

Educators and administrators should be aware of gendered language utilized in schools. Phrases like "ladies and gentlemen," "boys and girls," or circumstances where classes are divided by binary genders are all places that can cause unnecessary stress and anxiety for transgender and nonbinary students. Consider other ways to address or group students including (but not limited to):

- Everyone, folks, friends, or colleagues to address groups of students.
- Grouping students based on their birthdate, their favorite colors, or random numbering, rather than by binary genders.

E. School Facilities

POLICY:

With respect to all restrooms, locker rooms, or changing facilities, students shall have access to facilities that correspond to their gender identity. Schools may maintain separate restrooms, locker rooms or changing facilities for male and female students, provided that they allow all students equal access to facilities that are consistent with their gender identity. Transgender and nonbinary students should determine which facilities they feel safest and most comfortable using.

Any student who is uncomfortable using a shared gender-segregated facility, regardless of the reason, shall, upon the student's request, be provided with a safe and non-stigmatizing alternative. This may include, for example, addition of a privacy partition or curtain, provision to use a nearby private restroom or office, or a separate changing schedule. However, such alternatives shall only be provided to a student upon that student's request. Requiring a transgender or nonbinary student to use a separate space against their wishes threatens to stigmatize the student and disclose their transgender status to others. Under no circumstances may students be required to use gender segregated facilities that are inconsistent with their gender identity.

Schools shall designate any existing facilities that are designed to be used by only one person at a time as accessible to all students regardless of gender. However, under no circumstances shall a student be required to use a single-user facility because they are transgender or nonbinary. Schools are encouraged to assess ways to increase privacy for all students in existing facilities, and to incorporate universal-design approaches for all-gender facilities with enhanced privacy in new construction or renovation.

IMPLEMENTATION AND NOTES:

CONSIDERATIONS FOR RESTROOMS, LOCKER ROOMS, OR CHANGING FACILITIES

The model policy ensures equal access to all school facilities by making clear that all students have the right to be treated according to their gender identity. At the same time, the model policy also acknowledges that some students, for a variety of reasons, may feel uncomfortable using shared facilities. This may include transgender students, students with disabilities or physical differences, students who are reluctant to use facilities alongside a transgender student, or other students. The model policy provides for accommodating students upon request by providing a safe and non-stigmatizing alternative.

The model policy also encourages schools to consider universal-design approaches to provide all-gender facilities with increased privacy in new construction or renovations. These approaches, which may include an open restroom plan with fully enclosed stalls, have been recognized for their potential to improve flow, maximize privacy and use of space, and improve accessibility for people with disabilities, transgender and nonbinary individuals, and others.

F. Physical Education, Sports, and Extracurricular Activities

POLICY:

Students shall be permitted to participate in all physical education, athletics, and other extracurricular activities according to their gender identity. Participation shall not be conditioned by requiring legal or medical documentation.

Participation in interscholastic sports is governed by the [State Student Athletic Association]. If the Association has policies regarding transgender and nonbinary athletic participation, the school will implement and utilize those policies accordingly.

[If there is no state athletic association policy, see GLSEN's recommendations for athletic policies.]

For overnight school trips: Students shall be allowed use of an overnight facility that corresponds with their gender identity. Transgender and nonbinary students will be consulted in the planning process, to address any potential concerns and needs for privacy. If applicable, a student's parent/guardian should also be consulted, unless there are privacy concerns in doing so.

Under no circumstances should a transgender or nonbinary student be denied the opportunity to participate in any overnight trips or other opportunities based on overnight accommodations. No student should be required to be housed separately or in a manner that does not reflect their gender during any school sponsored trip or event. The school shall make all efforts to accommodate any student who desires greater privacy in overnight trips.

IMPLEMENTATION AND NOTES:

Generally, athletics participation at the interscholastic level is governed by state athletic associations. In states where there is no state-wide policy, schools and LEAs should reference [GLSEN's athletic-specific guidance document](#).

Overnight trips can be awkward and difficult for many youth, not just transgender and nonbinary youth. Schools and LEAs should be prepared to offer reasonable accommodations for all youth with privacy concerns. Educators and/or staff should have open conversations with youth about overnight accommodations well in advance of the trip, and provide all students with the opportunity to make reasonable requests. Preparation should include upfront communication about rooming, facilities, and expectations for the event.

G. Dress Code

POLICY:

Schools may enforce dress codes, but any dress code must be gender-neutral. Students must have the right to dress in accordance with their gender identity, within the constraints of the dress codes adopted by the school. School staff must not enforce a school's dress code more strictly against any group of students, including transgender and gender-nonconforming students.

IMPLEMENTATION AND NOTES:

LEAs are more often adopting dress codes that do not have separate rules based on gender. Under these policies, all students have access to the same clothing options regardless of gender, and students cannot be disciplined for wearing clothes associated with a particular gender if those clothes otherwise comply with the dress codes. For example, a school's dress code might say, "Skirts or shorts may not end more than two inches above the knee" rather than "Girls may not wear skirts that end more than two inches above the knee." This approach minimizes the risk of liability under the First Amendment and laws prohibiting discrimination based on actual or perceived race, color, national origin, sex, disability, sexual orientation, gender identity, class, or religion.

H. Training and Professional Development

POLICY:

As an institution built on the foundation of knowledge and education, [school/LEA] is dedicated to ensuring all educators, staff, and administrators are prepared with the information necessary to create a safe, welcoming, and inclusive learning environment. To foster this environment of learning and inclusively, all staff and educators will participate in annual professional development and training specific to the needs of transgender and nonbinary students and colleagues. The material covered in this training shall include, but not be limited to:

- Terms, definitions, concepts, and understandings relevant to gender identity and gender expression in youth;
- Using appropriate names, pronouns, and other terms for students;
- Strategies for communication with students and parents/guardians about issues related to gender identity and gender expression;
- Classroom management practices, curriculum, and resources that educators can integrate into their classrooms to help build a more gender-inclusive environment for all students;
- Current policies related to gender identity, gender expression, privacy, and bullying prevention in the school/district;
- Provide a space to listen, provide feedback, and help address any questions or concerns staff and educators may have related to transgender and nonbinary student inclusion.

This professional development and training will be held annually, to ensure that newly hired staff and educators are equally informed and any changes are clearly communicated in a timely manner. If applicable, this training may coincide with other previously scheduled training, onboarding, or professional development days, so long as the relevant information is conveyed.

IMPLEMENTATION AND NOTES:

In order to ensure this policy is implemented and utilized correctly, it is critical for schools and LEAs to provide annual mandatory training and professional development on the material. Schools and agencies may consider bringing in an outside facilitator to convey the information. Ideally, schools and/or agencies should hire a facilitator with lived experience, such as a transgender or nonbinary educator, young person, or health expert.

Training and professional development concerning transgender or nonbinary students should not wait until a student comes out in school. Schools and LEAs should be proactive in providing this information, rather than react when a student comes out. This proactive approach will help LEAs and schools avoid missteps, mistakes, and potentially emotionally, physically, or even legally damaging circumstances for everyone involved.

I. Notify and Engage K-12 Learning Communities on Policies to Support Transgender and Nonbinary Students

POLICY:

Students, parents/guardians, and families will be notified at least annually of nondiscrimination policies, including each student's right to be treated in accordance with their gender identity.

- Schools shall include this information in student handbooks, back-to-school messages, and other appropriate materials.
- Schools shall publish their policies on their websites.

IMPLEMENTATION AND NOTES:

All students and their families should be aware of students' rights and LEA policies and commitment to create supportive learning communities for all students, including transgender and nonbinary students. Schools should not wait for questions or issues to arise, but should proactively inform students and families.

Terms and Definitions

Transgender and nonbinary students may use different terms to describe their lives and experiences of gender. Terminology and language differ and evolve based on region, language, race or ethnicity, age, culture, and many other factors. Some examples of terms used by some youth include: trans, trans girl, trans boy, nonbinary, genderqueer, gender fluid, demi girl, demi boy, Two Spirit (amongst Native American, American Indian/Alaska Native, First Nation, or Indigenous communities only), and many more. Some trans youth prefer simply to be referred to as boys or girls except when their trans status is specifically relevant. These terms often mean different things or refer to different experiences of gender. Staff and educators should reflect and use the terms that students use to describe themselves, and avoid terms that make these students uncomfortable.

These definitions are provided not for the purpose of imposing labels, but rather to assist in understanding this policy and the obligations of school and agency personnel. Students may or may not use these terms to describe themselves or their experiences.

GENDER IDENTITY: A person's deeply held knowledge of their own gender, which can include being a man, woman, another gender, or no gender. Gender identity is an innate part of a person's identity. One's gender identity may or may not align with society's expectations with the sex they were assigned at birth (male, female, or intersex).

GENDER EXPRESSION: Expression of gender, whether through hair styles, makeup, or personal fashion, changes over the course of a person's lifetime.

TRANSGENDER/TRANS: An adjective describing a person whose gender identity differs from the sex they were assigned at birth. A trans woman is a woman whose sex was assigned male when she was born. A trans man is a man whose sex was assigned female when he was born. Some transgender people are not male or female, and may use terms like nonbinary to describe their gender (see below).

GENDER NONCONFORMING: A term sometimes used to describe people whose gender expression differs from social expectations, such as "feminine boys," "masculine girls," and people who are perceived as androgynous in some way. Being gender nonconforming is distinct from being transgender, though some trans people may consider themselves to be gender nonconforming. For example, a cisgender woman who has short hair and likes sports might consider herself gender nonconforming, but may not identify as transgender.

NONBINARY: A term used to refer to people whose gender identity is not exclusively male or female, including those who identify with a different gender, a combination of genders, or no gender. Nonbinary may be considered a subset of transgender or a distinct identity. Other similar or more specific terms may include genderqueer, gender fluid, agender, or Two-Spirit (for Native American students).

CISGENDER: An adjective describing a person whose gender identity corresponds with the gender society typically associates with the sex they were assigned at birth. The majority of people are cisgender, while a minority are transgender. For example, a cisgender woman was assigned female at birth and identifies as female her gender as a woman.

SEXUAL ORIENTATION: A person's romantic and/or sexual attraction to other people. This includes being straight, gay, bisexual, queer, asexual, or many other terms used to describe sexual orientation. This is different and distinct from gender identity. Transgender and nonbinary people may be straight, gay, lesbian, asexual, or any other sexual orientation.

TRANSITION: The process in which a person begins to live according to their gender identity. Transition is a process that is different for everyone, and it may or may not involve specific medical treatments or changes to official documents. There is no one step or set of steps that an individual must undergo in order to have their gender identity affirmed and respected.

QTBPOC: This is an acronym for Queer/Trans, Black, Indigenous, and People of Color.

For additional information and resources on this model policy contact GLSEN's Public Policy Office at policy@glSEN.org and the National Center for Transgender Equality at ncte@transequality.org.

EXHIBIT C

Educator Resources

Supporting Gender Expansive Students

While working proactively to be more gender-inclusive benefits all students, for many school leaders and educators, this work begins with supporting a transgender or gender expansive child at your school.

Creating Gender Support Plans

More than any other resource, Gender Support Plans (GSPs) have allowed schools across the United States and beyond to thoughtfully address the specific needs of transgender and nonbinary students. GSPs leverage the positive spaces established through gender inclusive practices. Their purpose is to create shared understandings about the ways in which the student's authentic gender will be accounted for and supported at school. Rather than a moment of crisis, a gender-expansive student's enrollment or emergence will affirm the truly gender-inclusive climate a school has worked so hard to create. Through the use of a Gender Support Plan, what can feel like a daunting task becomes a series of individual decisions and practices grounded in common sense approaches educators employ every day.

Each student's GSP will be unique, informed by the student's individual's needs, community, family situation and personality. What all GSPs share in common is an intentional and transparent process for systematically addressing the various areas that can otherwise negatively impact the student's experience at school. While a GSP is most effective in a setting that is proactively designed around gender inclusive principles, their lack does not preclude the use of a GSP. In fact, the absence of such conditions makes a carefully crafted plan essential for the student's safety, well-being and success at school.

Learn more about using the Gender Support Plan.

[Learn More](#)

The School/Home Partnership

When students, schools and caring adults collaborate, the impact is profound. Whenever possible, they should work together to identify the specific ways in which the institution will account for the student's gender-related needs. Ideally, each will spend time completing the various sections of the GSP to the best of their ability and then come together to review sections and confirm shared agreements for implementing the plan.

Establishing this collaborative relationship is not always easy. For some families of gender-expansive students, experiences with schools have been challenging and in some cases combative. Often facing systems unprepared or

unwilling to meet their child's needs, parents may approach their child's school ready to do battle. It is critical that educators are especially focused on building trust with the family, acknowledging their fears and articulating your commitment to ensuring their child's well-being. By genuinely demonstrating that their gender-expansive child is a welcome addition to your community, schools position themselves to establish an authentic partnership with families. The [Framework for Inclusive Schools](#) describes a number of tangible steps schools can take to demonstrate this welcoming stance. In so doing, you are setting up a relationship grounded in a common cause: the child's successful experience at your school.

Practical tips for creating a healthy school/home partnership can be found in our Initial School Meeting, a simple agenda for establishing this critical relationship. [Read More](#)

Initial School Meeting

Youth in Non-Affirming Homes

Sadly, some gender expansive students lack support for their gender at home, and may in fact be living in an environment that is openly hostile or even dangerous. This does not mean a school is precluded from providing an affirming environment on campus. In fact, doing so may be life-saving for the student. Though requiring sensitivity and caution, schools can successfully navigate this challenging situation.

Not surprisingly, the use of a Gender Support Plan will once again be critical. But in this case, the plan will be one developed between the school and student. In some cases, students will approach school staff seeking support, perhaps in the form of a request to use the name and pronoun by which they wish to be referred. In other cases, staff may observe something that signals the student is grappling with their gender. This might be a shift in their gender presentation, a comment in class or a reference by another student indicating a shift in the young person's understanding of their gender. Regardless of the cause, when school staff become aware of a student's gender being "on the table," it can be an appropriate time to respectfully raise the issue with the student and determine if they are looking for any support from the school. See more in "Privacy and Unsupportive Caregivers" in our article on "Schools and Privacy Issues." [Read More](#)

Schools and Privacy

Communicating a Change in Gender Status

When a student seeks gender congruence in a way that is new (or at least new at school), it marks a milestone in that young person's development. Handled well, it can be a profound experience for the young person, as well as for the entire school community. Be it through their outward appearance, social interactions or assertion of a new term for their gender identity, the process is by definition public. As such, it is incumbent on the school to support the student to plan accordingly. A Gender Communication Plan can be a useful tool for doing so.

Typically, this process will include things such as changes in a student's name or pronouns, a gender expression that is more aligned with their identity, the use of facilities such as restrooms or changing rooms consistent with gender identity, participation in activities such as sports or after-school programs, and various ways of socially interacting with other students and adults. [Read More](#)

Communicating a Change in Status

Responding to Concerns

It is incumbent on you to meet the needs of your transgender and other gender-expansive students, and doing so is well within your reach. It is also true that concerns may be raised by colleagues and community members along the way. Responding to these should not be an all-or-nothing, zero sum gamegain. Being able to respectfully address questions about your school's commitment to the well-being of **all** students, without compromising any child's privacy, is a critical aspect of gender inclusion.

So what does this look like in practice? School leaders from an array of contexts have discovered that answering these concerns is very much like handling any number of challenging inquiries you face on a daily basis, and that you can quickly become comfortable with just a little practice. [Read More](#)

Responding to Concerns

Know that the ideas above will most likely not result in some sort of epiphany on the part of the individual who has raised concerns in the first place. It may well be that they were never going to be open to any rationale you might provide. But in having a clear set of principles guiding your actions, you can demonstrate the professionalism and intentionality that is at the heart of being a gender inclusive educator, and that includes supporting the needs of the transgender and gender-expansive students you are, or most certainly will be, encountering. For more, see our [Introduction to Creating Gender Inclusive Schools](#).


EDUCATOR RESOURCES

Introduction: Creating Gender Inclusive Schools

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EXHIBIT D



PATIENT-CENTERED OUTCOMES RESEARCH INSTITUTE FINAL RESEARCH REPORT

Examining Health Outcomes for People Who Are Transgender

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Original Project Title: Comparative Risks and Benefits of Gender Reassignment Therapies

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ABSTRACT

Background: Transgender people are individuals whose biological sex does not match their gender identity. Some transmasculine (TM) and transfeminine (TF) individuals seek gender affirmation treatments that involve administration of cross-sex hormone therapy and/or surgical changes. The specific outcomes of interest in transgender health include acute cardiovascular events, mental health morbidity, cancer, and quality-of-life measures.

Objectives: The Study of Transition, Outcomes, and Gender was initiated to assess morbidity among transgender people in general and after gender-affirming treatments at Kaiser Permanente health plans in Georgia and Northern and Southern California and in the US Department of Veterans Affairs (VA) national health system.

Methods: The study included 3 components. The first component was a cohort study that collected data using electronic medical records (EMRs) of transgender individuals enrolled in the participating Kaiser Permanente plans aged 3 to 86 years at initial presentation.

The second component was a cross-sectional survey of selected Kaiser Permanente cohort participants. The third component was a retrospective cohort study of transgender veterans. The Kaiser Permanente EMR cohort component examined incidence of acute cardiovascular events in relation to hormone therapy, prevalence of mental health problems, and cancer incidence. The Kaiser Permanente survey component examined measures of quality of life by history and extent of gender affirmation. Most self-reported outcomes in the survey were ascertained using existing previously validated instruments. The VA EMR cohort component examined all-cause mortality and cancer incidence among transgender veterans.

Results: The search of Kaiser Permanente and VA EMR data yielded 2 cohorts that collectively included 11 442 transgender people of all ages with known TM/TF status and over 200 000 age-, race-/ethnicity-, and site-matched referents (ie, cisgender male and females used as comparison groups) selected from the same underlying populations. Notable associations in the Kaiser Permanente cohort of TF include elevated risk of venous thromboembolism (VTE) and ischemic stroke (IS). The increase in risk was particularly pronounced after 6 years of follow-up in the estrogen initiation subcohort (a subset of participants who started estrogen therapy at Kaiser Permanente after the index date). For example, the hazard ratio (95% CI) for VTE among TF individuals on estrogen (N = 17 events) compared with cisgender males was 1.9 (1.0-3.6) for the first 6 years of follow-up and 4.7 (1.4-16.2) after 6 years. The corresponding estimates for IS (N = 17 events) were 1.1 (0.5-2.2) and 6.8 (2.4-18.9). Another notable finding was the high prevalence of mental health conditions among transgender people, particularly children and adolescents. The prevalence of estimates for suicidal ideation and self-inflicted injuries were orders of magnitude higher in transgender children and adolescents than in the matched reference groups of the same age. The survey component of the study demonstrated that transgender congruence and body image, and to a lesser extent “passing status,” were higher among persons who completed their gender affirmation compared with those who received less treatment. Both Kaiser Permanente and VA EMR cohorts demonstrated that transgender

people do not experience higher incidence of cancers. Risk of prostate cancer was lower among TF than among reference males, an observation that was not explained by the differences in screening.

Conclusions: The current recommendations for follow-up of TF patients receiving hormone therapy do not emphasize the need for long-term surveillance for stroke and VTE. In view of our results, the existing recommendations may need to be revised. Especially worrisome are the findings for suicidal ideation and self-inflicted injuries among children and adolescents. These data indicate that a child presenting as transgender to a health care provider needs to be urgently evaluated for possible life-threatening comorbidities. While our survey should not be considered conclusive due to its cross-sectional design, it may inform the ongoing debate about coverage for gender affirmation therapy.

Limitations and Subpopulation Considerations: We recognize that transgender people enrolled through integrated health care systems such as Kaiser Permanente and the VA represent a cohort of persons with health insurance that may not be representative of the overall transgender population in the United States. It is expected that some of the results may differ among transgender people in different socioeconomic strata. Weighing against this concern is the demonstrated ability to efficiently identify a large cohort of transgender participants and referents with a high degree of internal validity. As gender affirmation therapy is increasingly initiated and received within the VA and Kaiser Permanente systems, many additional analyses may now be possible.

BACKGROUND

Transgender Health Issues and Knowledge Gaps

Transgender people are a diverse group of individuals whose biological sex does not match their gender identity.¹ Typically, sex is assigned at birth based on the appearance of the genitalia.² In contrast, an individual's gender identity is defined as being male/a man, female/a woman, or of a different gender.^{2,3} Many transgender people may not self-identify based on binary definitions⁴; however, a person whose gender identity differs from a male natal sex assignment is often referred to as male-to-female or a transwoman, and a person whose gender identity differs from a female natal sex is often referred to as female-to-male or a transman.^{5,6} More recently, the terms transfeminine (TF) and transmasculine (TM) have become preferred as they also apply to individuals who do not identify with binary gender categories.⁷ Individuals whose biological sex and gender identity are congruent are sometimes referred to as cisgender.

Some, but not all, transgender people seek medical gender affirmation.^{8,9} This is sometimes done to alleviate gender dysphoria, which is a diagnostic term that describes “a discomfort or distress that is caused by a discrepancy between a person's gender identity and that person's sex assigned at birth.”⁸ Gender affirmation therapy may involve administration of cross-sex hormone therapy to achieve desired masculinization or feminization, or use of gonadotropin-releasing hormone analogues in children to delay puberty. Potential surgical procedures include “top surgery” (eg, breast reduction or augmentation) and “bottom surgery” (eg, hysterectomy/orchiectomy or vaginoplasty/phalloplasty). Other interventions that may be used to change secondary sex characteristics include liposuction/lipofilling, electrolysis, or voice surgery.

Although several organizations have established guidelines for clinical care of transgender patients,^{9,10} many issues in transgender health and gender affirmation therapy remain unresolved due to lack of direct evidence. Critical knowledge gaps include uncertainty about the effects of hormone therapy and surgery on gender dysphoria and quality of life, and

the insufficiently understood risks of cardiovascular disease, metabolic or endocrine disorders, and cancer following hormonal or surgical gender affirmation.¹¹

It is important to emphasize that placebo-controlled experimental studies of cross-sex hormones or randomized trials comparing surgical procedures to no surgery may not be ethically justified or acceptable to transgender patients.¹² For this reason, much of the evidence pertaining to the risks and benefits of hormone therapy and other gender affirmation therapies must be obtained from observational studies.

A specific area of concern in transgender health is the risk of acute cardiovascular events including venous thromboembolism (VTE), ischemic stroke, and myocardial infarction, which may be plausibly related to cross-sex hormone therapy in TF individuals, and less so in TM individuals.¹³ As reviewed in detail elsewhere,^{14,15} despite concerns about cardiovascular health status of transgender people, the direct evidence addressing this issue is sparse and inconsistent due to the predominance of small studies with very few reported events.

Whereas cancer among transgender people is listed among research priorities,¹⁶ most of the concerns pertaining to occurrence and outcomes of malignant tumors in this population are based on anecdotal evidence or on the general considerations of possible disease mechanisms.¹⁷⁻²² A recent review of the literature identified 11 published articles assessing cancer incidence or mortality in transgender people,²³⁻³³ but found that the existing data do not allow any conclusions due to the small size of the available studies with very few events of interest.³⁴

While the aforementioned research topics address significant concerns relevant to transgender adults, unique health concerns affect transgender youth. A particularly important priority for health care of transgender or gender-nonconforming children and adolescents is management of mental health problems.^{9,35,36} These problems may be related to stigma and discrimination brought on by disclosure of transgender status.³⁷ In addition, children with gender variant behavior may experience parental verbal and physical abuse, which can create or further exacerbate life-threatening mental health conditions.³⁸ The literature on transgender

and gender-nonconforming youth consistently shows high prevalence of mental health diagnoses and self-reported behavioral and emotional problems.³⁹⁻⁴⁶ To date, most of the available data addressing mental health status of transgender and gender-nonconforming youth come from specialized clinics that provide care to this population.⁴⁷

Methodological Challenges Facing Transgender Health Studies

The methodological challenges in observational studies of transgender health fall into 5 categories: (1) attaining sufficient sample size and statistical power; (2) identification of eligible study participants and comparable reference groups; (3) determination of natal sex and/or gender identity; (4) assessment of gender affirmation treatment; and (5) systematic ascertainment of health outcomes of interest.

Transgender people represent a hard-to-reach population, and to date most existing cohorts assessing transgender health have been assembled in specialized clinics that offer gender affirmation care. This approach provides good options for detailed treatment data and biospecimen collection,^{48,49} but may exclude individuals who have not sought or who have already completed treatment and makes it difficult to select comparable reference groups from the same underlying population.

A critical aspect of transgender research is accurate identification of gender identity, because the available demographic data can reflect natal sex or gender identity, without specifying which is which.

Insurance coverage for gender affirmation therapy has increased over time⁵⁰⁻⁵²; however, it remains sporadic and incomplete, and many transgender people seek care outside regular health care plans.⁵³ This presents a specific challenge for any study that aims to ascertain hormonal exposures and surgical procedures, particularly for transgender people with no or inadequate insurance coverage and for persons who initiated gender-affirming therapy years ago.

Unbiased information on some health-related outcomes can be obtained through linkages with external data sources such as the National Death Index and cancer registries. Comprehensive and accurate ascertainment of new diagnoses and test results is more challenging. These data can be retrieved from medical records and can be retrieved from medical records, most efficiently with the use of electronic medical records (EMRs). However, this approach is more likely to yield high-quality data if the EMRs come from integrated centralized health systems.^{54,55} Many important outcomes, such as quality of life and satisfaction with care, can be obtained only by self-report, as is done in various areas of comparative effectiveness research.⁵⁶⁻⁵⁸

Introducing Study of Transition, Outcomes, and Gender

The existing knowledge gaps and methodological challenges motivated the design of the Study of Transition, Outcomes and Gender (STRONG). The study included 3 components. The first component was a retrospective/prospective cohort study that collected data using EMRs of transgender individuals enrolled in the Kaiser Permanente plans located in Georgia and in Northern and Southern California. This component had 2 types of follow-up. Retrospective follow-up occurred from 2006 to 2014 while the prospective follow-up extended through November 30, 2016. The second component was a cross-sectional survey of selected Kaiser Permanente cohort participants. The third component was a retrospective cohort study of transgender veterans identified via US Department of Veterans Affairs (VA) EMR. These components were initiated and completed concurrently. Table 1 presents a brief summary of the project timeline.

Although Kaiser Permanente plans provide high-quality data, inclusion of the VA cohort was important because most Kaiser Permanente enrollees are employed, insured, and have relatively stable incomes. In contrast, veterans, particularly those who exclusively use VA health care services, often live in poverty.⁵⁹

Table 1. STRONG Project Timeline

Project component	Date
Start project	October 1, 2013
Draft preliminary survey and study protocol	December 1, 2013
Hold first stakeholder advisory group meeting	December 15, 2013
Begin Kaiser Permanente EMR cohort ascertainment	March 1, 2014
Hold first online focus group with preliminary survey	April 1, 2014
Launch final study survey	June 1, 2014
Hold second stakeholder advisory group meeting	April 16, 2015
Begin matching eligible participants to reference cohorts	April 1, 2016
Link cohort members to outcome information	December 1, 2016
Begin data analysis	January 1, 2017
Hold final stakeholder advisory group meeting	April 26, 2017
Hold final online focus group with study results	June 28, 2017

Abbreviations: EMR, electronic medical record; STRONG, Study of Transition, Outcomes and Gender.

We used the EMR-based cohorts at Kaiser Permanente and the VA to achieve the first overall project goal of providing critical data on specific aspects of morbidity and all-cause mortality among transgender people overall, by gender identity, and, whenever possible, following various stages of gender affirmation. The survey component allowed us to achieve the second overall project goal to assess the roles of various gender affirmation steps in improving quality of life and alleviating gender dysphoria.

We formulated the broad research questions and specific hypotheses for the current analyses based on the preapplication survey (see the “Preliminary Survey” section), the input from the stakeholder advisory group (see the “Stakeholder Advisory Group” section), and recent consensus documents on transgender health research priorities¹¹. These broad research questions and specific hypotheses, and the data and analyses we used to examine these questions and hypotheses, are presented in the “Overall Study Structure and Objectives” section.

STAKEHOLDER INVOLVEMENT

A critical feature of STRONG is patient-centeredness. The study achieved this via 3 approaches: by conducting a preliminary survey of stakeholders, by assembling a stakeholder advisory group, and by conducting online focus groups. Each of these approaches is discussed below.

Preliminary Survey

In preparation for the study we engaged transgender stakeholders by distributing an online Health Priorities Survey. The methods of this survey were described previously.^{60,61} Briefly, we sent the invitation to complete the survey to persons who visited the social media sites of the 2012 and 2013 Southern Comfort Conference, a transgender education and social networking meeting held annually in Atlanta, Georgia. Although the meeting took place in Atlanta, it draws attendees with wide regional and national representation.

The survey presented participants with a list of various proposed research questions and asked them to rank these questions in order of ascending importance. In addition, the survey gave respondents an opportunity to provide 1 risk- and 1 benefit-related research question of their own. Most survey respondents (N = 471) identified as TF, non-Hispanic White, and 40 years of age or older, and had a college education. The participants indicated that the most important questions were those addressing the mental health– and quality of life–related benefits of gender affirmation therapy. Among risk-related questions the most important were the ones dealing with HIV and other sexually transmitted infections and those pertaining to cancer risk. Examples of benefit-related questions proposed by survey participants included “Does being diagnosed as transgender help you to better understand yourself than to just think you are crazy or weird?” and “Does hormonal/surgical gender alignment positively impact the following: work life, family life, daily interactions with other people, self-esteem/self-image, messages you give yourself?”

Stakeholder Advisory Group

To recruit stakeholder advisory group members, investigators at each site were charged with identifying a leading clinician specializing in transgender care. The physicians were then asked to nominate 1 or 2 patients to serve as representatives of the transgender community. The resulting stakeholder advisory group included 12 members (Table 2).

During the study implementation, we held monthly stakeholder calls and had 3 in-person stakeholder advisory group meetings. The stakeholders made many important contributions to the project at various stages of study design, planning, and implementation.

Based on the input from stakeholders received at our first stakeholder advisory group meeting (March 2014), we amended the cohort ascertainment methodology to include free text keywords. This approach increased the cohort size by approximately 30% and allowed the inclusion of an important category of individuals who do not wish to receive or have not yet received a transgender-specific diagnosis.

Table 2. Composition of the STRONG Stakeholders Advisory Group

Name	Affiliation	Credentials
Lemuel Arnold, MD	Kaiser Permanente, Atlanta, GA	Former member of Kaiser Permanente National Diversity Council and author of Provider's Handbook on Culturally Competent Care: Lesbian, Gay, Bisexual and Transgender
Nancy Baisch, MD	Kaiser Permanente, Los Angeles, CA	Obstetrician-gynecologist who serves as transgender care lead at Kaiser Permanente Southern California
George Brown, MD	Mountain Home VA Medical Center, Johnson City, TN	Psychiatrist who has been managing care of transgender patients for over 30 y and conducted several studies of transgender veterans
Cheryl Courtney-Evans	TILTT, Inc, Atlanta, GA	Executive director of TILTT, Inc, an organization dedicated to supporting socioeconomically disadvantaged transgender
Robin Dea, MD	Retired, Portland, OR	Psychiatrist with many years of experience providing clinical mental health care to members of the transgender community
Shawn V. Giammattei, PhD	Alliant International University, San Francisco, CA	Active member of the San Francisco Bay Area transgender community and a clinical psychologist specializing in counseling families of persons with gender identity
Monica Helms,	Retired, Atlanta, GA	US Navy veteran, author, and past president of the TAVA, and active member of the transgender community
Jennifer Slovis, MD	Kaiser Permanente Northern California, Oakland, CA	Primary care physician at Kaiser Permanente Northern California with an active clinical practice that includes a large number of transgender patients
Cadence Valentine	Independent consultant, Los Angeles, CA	Southern California-based transgender rights advocate who has been particularly instrumental in shaping Kaiser Permanente Southern California transgender health practices and delivery of care
Willy Wilkinson, MPH	Independent consultant, Oakland, CA	Writer, public health consultant, and transgender activist from Northern California
Savannah Winter	Independent consultant, Atlanta, GA	Active member of the transgender community in Atlanta with particular interest in transgender youth issues
Evan Young	TAVA, Dover, AK	Retired US Army Major and current national president of TAVA

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TAVA, Transgender American Veterans Association; TILTT, Transgender Individuals Living Their Truth.

The process of selecting keywords included input from the stakeholder advisory group. We shortened the list of keywords after stepwise removal of terms that did not contribute additional cases. The final list provided the greatest number of potential candidates.

Following advice from stakeholders, we expanded eligibility criteria to include transgender and gender-nonconforming youth (persons under 18 years of age). This change allowed many additional analyses and offers important opportunities for future follow-up.

We designed and pilot tested the study survey using input of the stakeholder advisory group. We dedicated 1 full day of the second stakeholder advisory group meeting (March 2015) entirely to the review and refinement of the study survey.

The third and final stakeholder advisory group meeting (April 2017) allowed us to prioritize the analyses and understand important knowledge gaps. For example, our initial analyses of survey data focused on body image scales as quality of life–related outcomes of gender affirmation therapy. The stakeholders felt that a more meaningful outcome measure is “passing status,” which participants expressed as the difference between the extent to which they wanted others to perceive them (desired score) and the extent to which they thought others actually perceived them (current score) as a person of their gender identity. We revised the analytic plan accordingly.

During data collection, stakeholders assisted with developing a complete list of generic medications and procedures for male-to-female and female-to-male gender affirmation (see Appendix 1). The publications describing our formative research,⁶⁰⁻⁶³ the current communication, and the manuscripts in different stages of preparation all include stakeholders as coauthors.

Online Focus Groups

We received additional stakeholder input by conducting 2 sets of online focus groups—one in the beginning and another at the end of the study. The purpose of the initial set of focus

groups was to assist with survey content, and the second set of focus groups aimed to receive feedback on the study findings and on the interpretation of results to date.

We recruited individuals for the online focus groups through a variety of ways, including email blasts from our stakeholders and investigators who serve the transgender community (eg, endocrinologists), posting the link on the Facebook pages of community-based organizations, and posting the link to a transgender support group websites. Of the 67 participants who completed the screening and eligibility form, consented to take part in the focus groups, and provided their contact information, 11 were from Facebook posts (6 TF and 5 TM), 41 were from email blasts with the project stakeholders and investigators (19 TF and 22 TM), and 15 were from website postings (5 TF and 10 TM).

The members of the stakeholder advisory group did not participate in the online focus groups. It is possible, but unlikely, that some of the study participants also participated in the online focus groups because recruitment for focus groups was independent of cohort ascertainment.

Participants in the first set of online focus group discussions received a \$10 Amazon gift card for completion of the survey and a \$25 Amazon gift card for participation in the online focus groups. Since participants were compensated for their time, we applied for IRB approval to perform this work. The initial online focus groups included 6 sessions held in March and April 2014. Before joining the online discussion, participants were asked to complete the web-based survey. Each online focus group lasted approximately 90 minutes and was held using Adobe Connect. We incorporated the input on each survey question into the survey before implementation. The report summarizing detailed feedback from the online focus group participants is included in Appendix 2.

The final online focus group occurred on June 28, 2017, and involved recontacting participants from the initial online focus groups. Most participants in the final focus group participated in one of the initial online focus groups. In addition, the final online focus group included a few transgender individuals who reached out to us and expressed interest in

learning more about the study. This second online focus group had a different format and was not considered research. Participants in this focus group were not compensated. The focus group started with a 45-minute webinar presentation by the study principal investigator, who introduced the study, highlighted the most important findings to date, and discussed the remaining knowledge gaps and plans for the future. To facilitate documentation of feedback, the participants (5 TM and 4 TF) were asked to provide feedback via an online chat room.

Participants emphasized the importance of this type of research, and one said that “this is the type of study that the trans community has long since been waiting for.” Participants had particular interest in learning about additional analyses with the available data. These included the following:

- The incidence of migraine headaches during hormone therapy
- The need for hormone treatment after surgery
- The risk of polycystic ovarian syndrome and other gynecological problems after starting testosterone
- The “necessity” of hysterectomy after a certain number of years of starting testosterone (current community belief is about 5 years)
- The relationship between ovarian cancer and testosterone
- The need for more research on the reproductive system and hormones in general
- The residual risk of breast cancer post-top surgery

METHODS

Overall Study Structure and Objectives

The STRONG project included 3 components. The first component was the EMR-based retrospective/prospective cohort study of transgender individuals enrolled in the participating Kaiser Permanente plans. There were 2 types of follow-up in this component. Retrospective follow-up occurred from 2006-2014 while the prospective follow-up extended through November 30, 2016. The second component was a cross-sectional survey of selected Kaiser Permanente cohort participants. The third component was a retrospective cohort study of transgender veterans identified via VA EMR. The 3 study components addressed the following research questions and hypotheses:

1. What is the mental health status of TM and TF individuals compared with cisgender men and women?

Specific hypothesis example: Prevalence of depression and anxiety is higher in transgender people than in cisgender men and women. We examined this hypothesis in a cross-sectional analysis of the baseline data from the EMR-based Kaiser Permanente cohort.

2. What is the risk of cancer among TM and TF individuals compared with cisgender men and women?

Specific hypothesis example: Incidence of prostate cancer is lower in TF individuals than in matched male referents. We examined this hypothesis using time-to-event analyses of the data from the EMR-based VA and Kaiser Permanente cohorts with follow-up extended from the data of initial presentation (index date).

3. Does incidence of cardiovascular disease differ in TM and TF persons treated with hormonal therapy alone and in persons who underwent surgery in addition to hormonal treatment, compared with transgender individuals who received no medical gender affirmation treatment?

Specific hypothesis examples: Incidence of VTE is higher in TF individuals compared with reference cohorts. We examined this hypothesis using time-to-event analyses of the EMR-based Kaiser Permanente cohort of TF and matched reference cohorts of cisgender males and females with follow-up extended from the date of initial presentation (indexdate), or the date of the first filled estrogen prescription.

4. Do transgender persons who received gender affirmation therapy experience better self-perception than persons who received no such treatment, and is this difference related to the type of treatment completed to date?

Specific hypothesis example: Transgender persons who report having received gender affirmation therapy score higher on the transgender congruence and body image scales compared with their counterparts who report receiving no such treatment. We examined this hypothesis in a cross-sectional analysis of the data from the Kaiser Permanente cohort survey.

The overall study implementation closely followed the original plan, and we prespecified all analyses presented in this report during the proposal phase of the study; however, we could not perform some of the analyses due to unanticipated data limitations. Specifically, as described in the “Kaiser Permanente EMR Data Analyses” section, we could not identify a group of transgender cohort participants without any history of hormone therapy of any kind.

We also found that, for some of the outcomes, the data either did not contain required numbers of events or did not include sufficient follow-up to examine associations with specific types of gender affirmation therapy. For example, we could not perform a comparison of cancer incidence by hormone therapy status because cancer is a rare event, and an evaluation of the association between cancer risk and hormone use would require a much larger cohort. The sample size needed to detect a 50% increase in lifetime risk of breast cancer among TF individuals on hormones compared with reference male individuals is nearly 28 000; this number increases further in a study with a relatively short (eg, 10-year) follow-up. Similarly, 2700 testosterone-treated TM participants would be required to detect a risk ratio of 1:5 for ovarian cancer compared with reference female participants. For this reason, we examined

cancer incidence in the present analyses only for the most common primary sites and for broad categories of malignancies.

These limitations notwithstanding, several aspects of the Kaiser Permanente study exceeded expectations in terms of both quality of the data and final sample size. During the planning phase of the project we planned to limit cohort ascertainment to *ICD* codes; however, as described in the “Cohort Ascertainment at Kaiser Permanente” section, during study implementation we developed a novel method that used relevant keywords in free-text clinical notes. This approach ensured inclusion of participants with no transgender-specific diagnoses, facilitated validation of eligibility and TM/TF status, and increased Kaiser Permanente cohort size from the planned 3200 to nearly 6500 individuals.

Unlike the Kaiser Permanente–based part of the STRONG project, the VA analyses were delayed for several years. The actual access to the VA data via the VA Informatics and Computing Infrastructure (VINCI) interface was not granted until April 2017 (less than 3 months before the end of the project). Another limitation of the VA component of the project is that the data could be accessed only via the VINCI interface. For this reason, it is currently not possible to combine the VA and the Kaiser Permanente EMR data. For all of the above reasons, the analyses of the VA cohort presented in the current report are more limited than the corresponding analyses of the Kaiser Permanente data (for details, see the “Methods of the VA Study” and “Mortality and Cancer Incidence Among Transgender Veterans” sections).

EMR-Based Study at Kaiser Permanente

Design and Settings of the Kaiser Permanente EMR Study

We designed this part of the STRONG project as a retrospective/prospective cohort study of transgender members enrolled in 3 Kaiser Permanente health plans located in Georgia and in Northern and Southern California. Despite the small sample size, the inclusion of Kaiser Permanente Georgia was critical because it served as the testing site for all data collection methods. The Kaiser Permanente health plans are prepaid integrated care systems that currently provide comprehensive health services to approximately 8 million members.

Individuals and their families may enroll through employer, state, or federal programs such as Medicaid and Medicare, or directly. The populations of enrollees are sociodemographically diverse and broadly representative of the communities in the corresponding areas.^{64,65}

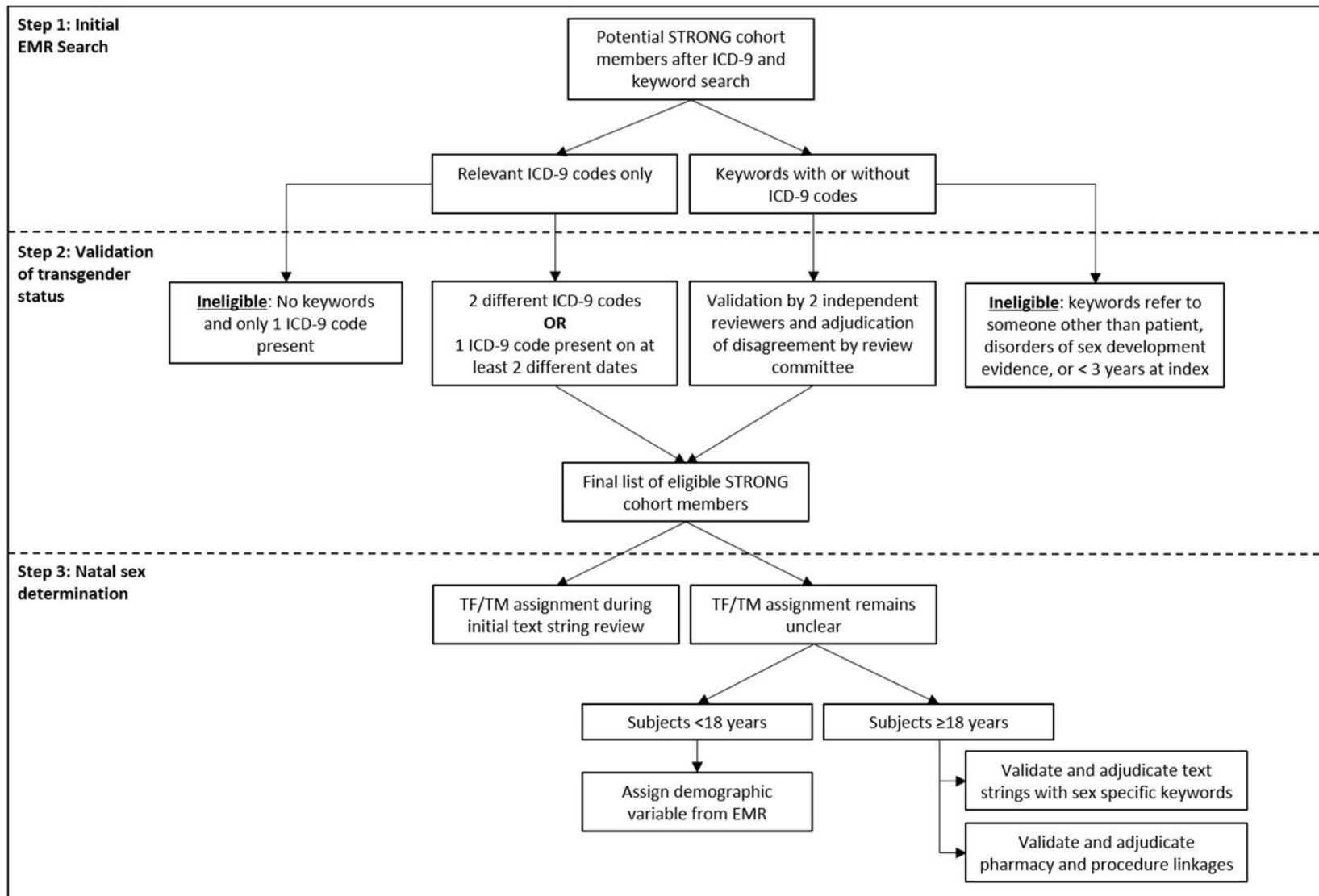
Cohort Ascertainment at Kaiser Permanente

Figure 1 shows the 3-step algorithm we used to identify transgender cohort members. The algorithm included initial EMR search to identify cohort candidates (step 1), validation of transgender status (step 2), and determination of TM/TF status (step 3).

Step 1: initial EMR search. We used an SAS program ([computer program]. Cary, NC: SAS Institute)⁷² to search the EMR of Kaiser Permanente members of all ages enrolled at 1 of the 3 participating sites between January 1, 2006, and December 31, 2014, to identify 2 types of evidence supporting transgender status: (1) relevant *ICD* 9th edition (*ICD-9*) codes; and (2) presence of relevant specific keywords in free-text clinical notes (Table 3). We developed and pilot tested the program at Kaiser Permanente Georgia, and then distributed to the remaining sites. We completed cohort ascertainment before the health plans switched to *ICD* 10th edition (*ICD-10*) codes.

We selected the diagnostic *ICD-9* codes suggestive of transgender status based on consultations with the stakeholder advisory group (see the “Stakeholder Advisory Group” section) and based on methodology described in earlier studies.^{32,66} We included transvestic fetishism (*ICD-9* code 302.3) based on previous observations that men who initially meet criteria for this diagnostic category may later experience persistent gender dysphoria consistent with transgender status.⁶⁷ We also used *ICD-9* V codes, which allow for supplementary classification of factors influencing health status.^{68,69} As V codes may cover several conditions, we used them in conjunction with internal Kaiser Permanente codes to ensure specificity. For example, a combination of *ICD-9* code V49.89 and Kaiser Permanente code 121141596 means “Other conditions influencing health: transgender.”

Figure 1. STRONG Transgender Cohort Ascertainment Flow Diagram



Abbreviations: EMR, electronic medical record; STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; TM, transmasculine.

Table 3. ICD-9 Codes and Keywords Used to Identify Potentially Eligible STRONG Transgender Cohort Members Among Kaiser Permanente Members in Georgia, Northern California, and Southern California

ICD-9 diagnostic codes	ICD-9 V codes ^a + internal Kaiser Permanente codes	Keywords
<ul style="list-style-type: none"> • 302.5 – Trans-sexualism • 302.50 – Trans-sexualism with unspecified sexual history (aka “transsexualism not otherwise specified”) • 302.51 – Trans-sexualism with asexual history • 302.52 – Trans-sexualism with homosexual history • 302.53 – Trans-sexualism with heterosexual history • 302.85 – Gender identity disorder in adolescents or adults • 302.6 – Gender identity disorder in children • 302.3 – Transvestic fetishism 	<ul style="list-style-type: none"> • V49.89 + 121141596 – Other conditions influencing health: transgender • V45.77 + 121141596 – Acquired absence of genital organs: history of sex reassignment surgery • V07.8 + 12124952 – Other specified prophylactic measure: male-to-female hormone supplementation • V07.8 + 12124310 – Other specified prophylactic measure: female-to-male hormone supplementation 	<ul style="list-style-type: none"> • Transgender • Transsexual • Transvestite • Gender identity • Gender dysphoria • Gender reassignment

Abbreviation: STRONG, Study of Transition, Outcomes and Gender.

^aICD-9 V codes are used for supplementary classification of factors influencing health status.^{68,69} As V codes may cover several conditions, they have to be used in conjunction with internal Kaiser Permanente codes to ensure specificity.

The second method of transgender ascertainment involved using a custom-written program that identified the relevant keywords in free-text clinical notes, recognizing that both appropriate and inappropriate terms could be found in the EMR. During pilot testing we used an expanded list of keywords provided by the stakeholders; we gradually shortened that list after stepwise removal of keywords that did not contribute additional cases. The resulting list provided the greatest number of potential candidates.

Step 2: cohort validation. A separate program extracted short strings of text that included 100 characters before and 50 characters after each keyword of interest. When clinical notes contained relevant keywords (with or without an ICD-9 code), 2 trained reviewers confirmed transgender status through examining the deidentified text strings. A review committee adjudicated disagreements among reviewers. Review and validation of text strings

was considered the gold standard of transgender status. We considered cohort candidates with no keywords but at least 2 different diagnostic codes or the same code on different dates to be eligible. We excluded candidates who had evidence of disorders of sex development and those younger than 3 years of age at the index date. Disorders of sex development (DSD) are a group of diverse conditions characterized by abnormalities of chromosomal, gonadal, or anatomic sex.⁷⁰ We decided to exclude persons with DSD because, compared with transgender people (our population of interest), these individuals present a very different set of challenges. For example, most DSD patients receive surgery early in life, and Hormone Therapy recommendations in this group are also very different and condition-specific.

Step 3: determination of TF/TM status. We categorized each eligible study participant as TF or TM using several methods. We used all keyword text strings and *ICD-9* codes extracted during step 1 to identify additional words such as *male-to-female* and *female-to-male* and gender affirmation V codes (V07.8 + 12124952 and V07.8 + 12124310). During the validation of transgender status, the reviewers were also instructed to categorize each eligible person as “natal male,” “natal female,” or “unclear.”

For persons whose TF/TM status was unclear after the initial review, and for persons with *ICD-9* codes only, we developed another free-text program to search for keywords reflecting natal sex anatomy (eg, testes or ovaries), history of specific procedures (eg, orchiectomy or hysterectomy), or evidence of hormonal therapy (eg, estrogen or testosterone). The keywords we used for assigning TM/TF status are included in Table 4. We reviewed and adjudicated text strings containing TF- and TM-specific keywords as discussed above.

Gender Affirmation Status

During the initial STRONG cohort validation (step 2) and natal sex determination (step 3), reviewers were instructed to check a box for “Evidence of treatment” if the text strings provided an indication of receipt or referral for hormone therapy, surgery, or other relevant procedures (eg, electrolysis). Disagreements were adjudicated, as described previously.

In addition to text string reviews, we determined gender affirmation treatment status by linkages with cross-sex hormone prescriptions using national drug codes, as well as *ICD-9*, *ICD-10*, and Current Procedure Terminology (CPT) codes reflecting operations and other interventions (Appendix 1). We considered any instance of TF drugs (eg, estradiol, spironolactone) in a natal male and TM drugs (eg, testosterone) in a natal female as evidence of hormone therapy.

Because of these steps, we categorized cohort members based on any evidence of hormone therapy and surgical or other gender affirmation procedures. We categorized gender affirmation procedures as the following: bottom (eg, vaginoplasty for TF or vaginectomy for TM); top (eg, breast augmentation for TF or mastectomy for TM); interventions to change secondary sex characteristics (eg, electrolysis); or not specified (eg, evidence of surgery in the text only).

Table 4. Keywords Used for STRONG Transgender Cohort Natal Sex Assignment

Transfeminine	Natal sex keywords	Testes, testicular, penis, penile, prostate, prostatic, PSA, scrotum, neovagina, neo-vagina, neo vagina, sperm, erection
	Hormonal therapy keywords	Estrogen, antiandrogen, progesterone, aldactone, avodart, cenestin, climara, cyprostat, cyproterone, delestrogen, depo-estradiol, divigel, dutasteride, elestrin, enjuvia, estrace, estradiol, estroderm, estrogel, estrosorb, flutamide, finasteride, lupron, medroxyprogesterone, premarin, prempase, prempo, propecia, proscar, prometrium, provera, spironolactone,
	Procedure keywords	Castration, orchiectomy, penectomy, vaginoplasty, breast augmentation, breast enlargement, laryngeal shave, feminization, electrolysis, hair transplant, collagen, silicone, voice therapy
Transmasculine	Natal sex keywords	Ovary, ovaries, ovarian, cervix, uterus, uterine, vagina, PAP smear, menstrual bleeding, menses
	Hormonal therapy keywords	Android, androderm, androgel, axiron, delatestryl, depo-testosterone, striant, testim
	Procedure keywords	Vaginectomy, phalloplasty, metoidioplasty, mastectomy, hysterectomy, oophorectomy

Abbreviations: PSA, prostate-specific antigen; STRONG, Study of Transition, Outcomes and Gender.

Selection of the Reference Cohort

We matched up to 10 male and 10 female Kaiser Permanente enrollees without evidence of transgender status to each member of the final validated transgender cohort on year of birth (within 2-year groups for children and 5-year groups for adults), race/ethnicity, Kaiser Permanente site, and membership year at the index date. We selected age, race/ethnicity, and membership as matching variables to achieve comparability of the transgender and reference populations. We defined index date as the date of the first recorded evidence of transgender status in the EMRs. The 10:1 ratio for both male and female reference cohorts was needed to allow exclusions of some referents for certain types of analyses. For example, in the analyses of VTE, we excluded participants if they had a history of thromboembolism before the index date. Having a 10:1 ratio ensured that each transgender participant had a sufficient number of referents after exclusions. For some transgender cohort members, the numbers of referent males or females were fewer than 10 due to duplicate matches; however, no transgender participant had fewer than 7 referents of either sex. We assigned a cluster ID for each matched group to allow stratified analyses (eg, by hormone therapy type or gender-affirming surgery).

Data Integration and Follow-up

We linked patient identification numbers for both the transgender and the reference cohorts to multiple data sources. We used *ICD-9* and *ICD-10* codes to ascertain conditions of primary interest (eg, mental health disorders, cardiovascular diseases, diabetes). Linkages with disease registries allowed identification of incident cancers and HIV diagnoses. We ascertained mortality from linkages to death registries. All members of the cohort were assigned a study ID by the programmer at each Kaiser Permanente site and no personally identifiable information was included in the aggregated analytic file. Cohort follow-up extended through the end of 2016.

Kaiser Permanente EMR Data Analyses

Overview. The analyses of the Kaiser Permanente EMR data addressed 3 areas of research. In the first analysis we examined rates of acute cardiovascular events in relation to hormone therapy use.

These analyses included 2 comparisons: (1) TM/TF individuals vs reference males and females; and (2) TM/TF individuals on cross-sex hormones vs reference males and females. We restricted this analysis to participants who started hormone therapy at Kaiser Permanente after the index date (hormone initiation subcohort).

In the second analysis we compared incidence of cancer among transgender participants and in the 2 reference cohorts. We could not perform a comparison of cancer incidence by hormone therapy status because cancer is a rare event and an evaluation of the association between cancer risk and hormone use required a much larger cohort.

The objectives of the third analysis were to calculate the prevalence of mental health diagnoses among transgender Kaiser Permanente enrollees at the time of their initial presentation (index date) and to compare their mental health status against that of matched referents of either natal sex. We limited these analyses to estimation of prevalence because longitudinal changes in mental health status would require extended follow-up. The follow-up in our cohort was relatively short, with a mean of 3.7 years for TM individuals and 4.1 years for TF individuals. We performed all analyses using SAS Software Version 9.4 (SAS Institute, Inc).⁷²

Analysis of acute cardiovascular event rates in relation to hormone therapy use in the Kaiser Permanente cohort. We included in this analysis only participants aged 18 or older at the index date and with a TM/TF determination, and matched members of the reference cohorts. The acute cardiovascular events of interest included VTE, ischemic stroke, and myocardial infarction. VTE events included pulmonary embolism (*ICD-9*: 415.1; *ICD-10*: I26.0 and I26.9); phlebitis and deep vein thrombophlebitis (*ICD-9*: 451.1, 451.2, 451.8, and 451.9; *ICD-10*: I80.x); and other venous embolism and thrombosis (*ICD-9*: 452.x and 453.x; *ICD-*

10: I81.x and I82.x). We identified ischemic stroke cases based on *ICD-9* codes of 433.x and 434.x and *ICD-10* codes of I63.x, I65.x, and I66.x. We identified cases of myocardial infarction based on the *ICD-9* code of 410.x or the *ICD-10* code of I21.x.

We characterized all study participants according to their history of cross-sex hormone use, cigarette smoking, body mass index (BMI), blood pressure, and total blood cholesterol. We categorized smoking status as current, former, never, or unknown. We categorized BMI as underweight (<19.0), normal weight (19.0-24.9), overweight (25.0-29.9), obese (≥ 30.0), or unknown. We determined blood pressure and blood cholesterol levels closest to the index date (within 2 years) from clinical or laboratory data. We categorized blood pressure as normal (systolic ≤ 120 or diastolic ≤ 80 mm Hg), borderline (systolic 121-139 or diastolic 81-89 mm Hg), elevated (systolic ≥ 140 or diastolic ≥ 90 mm Hg), or unknown. We categorized blood cholesterol as normal (<200 mg/dL), borderline (200-239 mg/dL), high (>239 mg/dL), not done (unknown for persons younger than 40 years), or unknown.

We examined the distributions of descriptive characteristics across the TM and TF cohorts. We calculated incidence rates as the number of cases per 1000 person-years, and we calculated the corresponding 95% CIs using the Poisson distribution. We constructed cumulative incidence curves using life-table methods to compare incidence of each acute cardiovascular event type in the overall TM and TF cohorts against the corresponding matched reference cohorts. The follow-up in these analyses extended from the index date until the first occurrence of the event of interest, disenrollment from the plan for more than 90 days, death, or the end of the study period (November 30, 2016).

We constructed similar cumulative incidence curves for a subset of participants who started hormone therapy at Kaiser Permanente after the index date (hormone initiation subcohort). The follow-up in these analyses started at the first filled prescription for estrogen in TF participants or testosterone in TM participants. We assigned matched participants the same follow-up start date. We then limited the hormone therapy group to TF patients receiving oral estrogen because current recommendations indicate that risk of VTE in this population may be higher following administration of oral hormones.

We used multivariable Cox proportional hazards models to compare rates of acute cardiovascular events in the overall TM and TF cohorts and hormone initiation subcohorts against the matched reference cohorts after controlling for history of acute cardiovascular events, smoking, BMI, blood pressure, and blood cholesterol ascertained near the index date. We tested proportional hazard assumptions by examining log minus log plots for each variable in the model. We expressed the results of the Cox models as adjusted hazard ratios (HRs) with corresponding 95% CIs. When the proportional hazard assumption was violated, we used stratified Cox models to control for covariates, and we used extended Cox models with time-dependent HR estimates for the main independent variable of interest.

To examine the impact of different case definitions, hormone therapy exposure assumptions, and analytic approaches, we conducted a series of sensitivity analyses. In these analyses, we first limited acute cardiovascular events to those associated with inpatient or emergency department encounters. Next, we defined initiation of hormone therapy based on the first pharmacy record for any gender affirmation drug (eg, spironolactone rather than specifically estrogen). Then we restricted the cohort to persons without a history of the event of interest. Finally, we replicated the main analyses by replacing missing data for BMI, smoking, systolic and diastolic blood pressure, and blood cholesterol with imputed values. As imputations of missing data require numeric values, the variables in these analyses were either continuous or binary. The continuous variables included age, blood pressure, and cholesterol level. The binary variables included race/ethnicity (non-Hispanic Blacks vs other), gender, current smoking (yes vs no), and BMI (elevated vs not).

Analysis of cancer incidence in the Kaiser Permanente cohort. We ascertained incident cancer cases among the transgender and comparison cohorts via linkages to surveillance epidemiology and end results–based cancer registries at each site. We followed all participants from index date until the first occurrence of a cancer diagnosis, disenrollment from the plan for more than 90 days, death, or the end of the follow-up (November 30, 2016). We excluded from the analysis participants with a cancer diagnosis before the index date.

We calculated cancer incidence rates as the number of cases per 100 000 person-years, and we estimated the corresponding 95% CIs based on Poisson distribution. We calculated the rates for all cancers combined; for cancer sites with at least 5 cases; and for categories of malignancies with shared risk factors including smoking-related cancers (lung, trachea, esophagus, larynx, other head/neck, cervix, stomach, bladder, pancreas, and kidney), viral infection–induced cancers (anus, cervix, base of tongue, tonsil, oropharynx, nasopharynx, pharynx, liver, non-Hodgkin lymphoma, Hodgkin lymphoma, and Kaposi sarcoma), and screening-detectable cancers (cervix, breast, colon, prostate, and melanoma of the skin).

We compared TM and TF participants with the matched reference cohorts. We performed the comparisons using Cox proportional hazards models controlling for smoking and BMI ascertained at the index date.

We tested the proportional hazards assumption by examining log minus log plots for each variable in the model. If the proportional hazard assumption was violated, we used stratified models. We expressed the results of the Cox models as adjusted HRs and corresponding 95% CIs.

Analysis of mental health status at index date in the Kaiser Permanente cohort. We grouped the mental health diagnoses, as described previously,⁷¹ into the following categories of conditions: anxiety disorders, attention deficit disorders, autism spectrum disorders, bipolar spectrum disorders, conduct/disruptive disorders, dementia, depressive disorders, eating disorders, psychoses, personality disorders, schizophrenia spectrum disorders, self-inflicted injuries and poisonings, substance abuse disorders, and suicidal ideation. The *ICD-9* and *ICD-10* codes we used for ascertainment of each of these conditions are included in Appendix 5.

We calculated prevalence of mental health conditions in each of these categories for 3 time windows: any time (ever), within 12 months, and within 6 months before the index date. We calculated all prevalence estimates separately for TM and TF within 3 age groups: 3 to 9, 10 to 17, and at least 18 years of age.

To assess differences in prevalence by severity of the conditions of interest, we conducted the analyses for any of the diagnoses of interest and for diagnoses associated with hospitalizations. The numerator for “ever” prevalence of any disorder of interest included persons with at least 2 different diagnoses on the same date or the same diagnosis on at least 2 different dates. In the analyses for 12-month and 6-month time windows, and in the analyses limited to hospitalizations, we considered 1 diagnostic code sufficient for inclusion in the numerator.

We compared each prevalence estimate against the corresponding estimates among matched male and female referents. We performed these comparisons by calculating prevalence ratios (PRs) and the 95% CIs using logistic regression models with log link option. We performed the analyses using SAS macros, developed at the Biostatistics and Bioinformatics Shared Resource of the Emory University Winship Cancer Institute.⁷²

To examine differences in prevalence of mental health conditions within the adolescent age group we conducted sensitivity analyses separately for participants who were aged 10 to 13 years and 14 to 17 years. The same sensitivity analyses also examined the possibility that prevalence of mental health diagnoses may be artificially inflated if physicians selected these codes instead of those for gender dysphoria to protect patient confidentiality or to avoid insurance coverage problems (the latter consideration would be most relevant in earlier years, before Kaiser Permanente instituted comprehensive coverage for transgender care). To address this issue, we limited the sensitivity analyses to transgender participants who had no specific diagnostic codes and were identified exclusively via keywords. As we expected additional stratification and restrictions to render imprecise estimates for relatively rare conditions, we limited these sensitivity analyses to the most common end points.

We plotted a correlation matrix to assess cooccurrence of mental health diagnoses through the use of Corrgrams.⁷³ Using this approach, all pairwise correlations are expressed as ϕ statistics and are reordered in the matrix so that co-occurring diagnoses are positioned adjacently, facilitating perception of clusters involving 3 or more conditions. The correlation matrices are depicted graphically in 2 ways: shaded squares and pie charts. In both methods,

blue color corresponds to a positive correlation while red denotes a negative correlation, and the intensity of the color corresponds to the magnitude of the correlation. The size of the shaded sector in a pie diagram equals the corresponding ϕ coefficient (range, 0-1.0).

There are 2 ways of distinguishing between positive and negative correlations in black-and-white images. In the shaded squares denoting positive correlations, the diagonal white line goes from the bottom left to the top right corner, whereas for negative correlations, the diagonal line goes from the top left to the bottom right. In addition, pie chart sectors filled in the clockwise and counterclockwise directions represent positive and negative correlations, respectively.

Survey of Kaiser Permanente Cohort Participants

Survey Goal and Content

Many data elements of interest cannot be ascertained from the EMR data. For this reason, the goal of the survey was to collect information that could only be obtained from participant self-report. We achieved this via an online cross-sectional survey using the SurveyGizmo interface. The participants were also offered an option of filling out a paper version of the survey.

The survey started with a 2-part screening question: first inquiring about the participants' natal (assigned at birth) sex, and then asking about their current gender identity. Only persons whose natal sex was different from the gender identity were eligible to proceed to the full survey. If the gender identity was different from the natal male sex, we considered the participant TF; if the gender identity was different from the natal female sex, we considered the participant TM.

The survey included 2 versions—1 for TM participants and 1 for TF participants—and included many skip patterns and “piping” questions. For example, questions regarding specific doses of estrogen were relevant only to TF participants who reported receiving estrogen. Similarly, questions about side effects of surgery were specific to the participants' TM/TF status

and were relevant only for those respondents who reported undergoing a particular procedure. Despite these differences, the main sections of the survey were applicable to all participants.

Section 1 of the survey collected information about participant demographic characteristics, including age, socioeconomic status, and various aspects of gender identity. The gender identity part of the survey presented a series of continuous sliding scales dealing with separate, but related, domains of identity (male or female) and expression (masculine or feminine).^{74,75} In addition, this section of the questionnaire inquired about the participants' relationship status and sexual orientation.

The objective of section 2 was to collect information about hormone therapy, history of gender affirmation operations and procedures, and current body image. The questions related to hormone therapy asked about specific medications, routes of administration, and doses. Questions related to surgery inquired about specific procedures, complications, and plans for future operations. Two additional items in section 2 included Transgender Congruence Scale (TCS) and body image score. TCS is a validated 15-item instrument aimed at measuring a transgender person's level of comfort with gender identity.⁷⁶ For example, the survey asked participants how strongly they agree or disagree with the statement "my outward appearance represents my gender identity" (see Appendix 6). To assess body image, we used the body attractiveness subscale of the previously validated Revised Physical Self-perception Profile.⁷⁷ Section 3 of the survey examined somatic and mental health status of study participants. Using the drop-down menu, the survey asked participants to select various conditions and indicate the year of diagnosis. We assessed health-related quality of life using the 8-item Short Form Health Survey.^{78,79} We collected information about participants' mental health status using the previously validated 10-item Center for Epidemiologic Studies Depression scale^{60,80} and the Beck Anxiety Index.^{81,82} Additional items in this section included self-reported body mass, use of alcohol and tobacco, and history of HIV testing.

The data elements included in section 4 of the survey were satisfaction with care, "outness," and experiences with abuse and discrimination. At the end of the survey the respondents were offered an option of recording their contact information for future studies.

The survey underwent several rounds of review with input from investigators and stakeholders. After incorporating suggestions from the study team and the stakeholder advisory group, we pilot tested the survey with 6 synchronous online focus groups (see the “Online Focus Groups” section).

Survey Recruitment

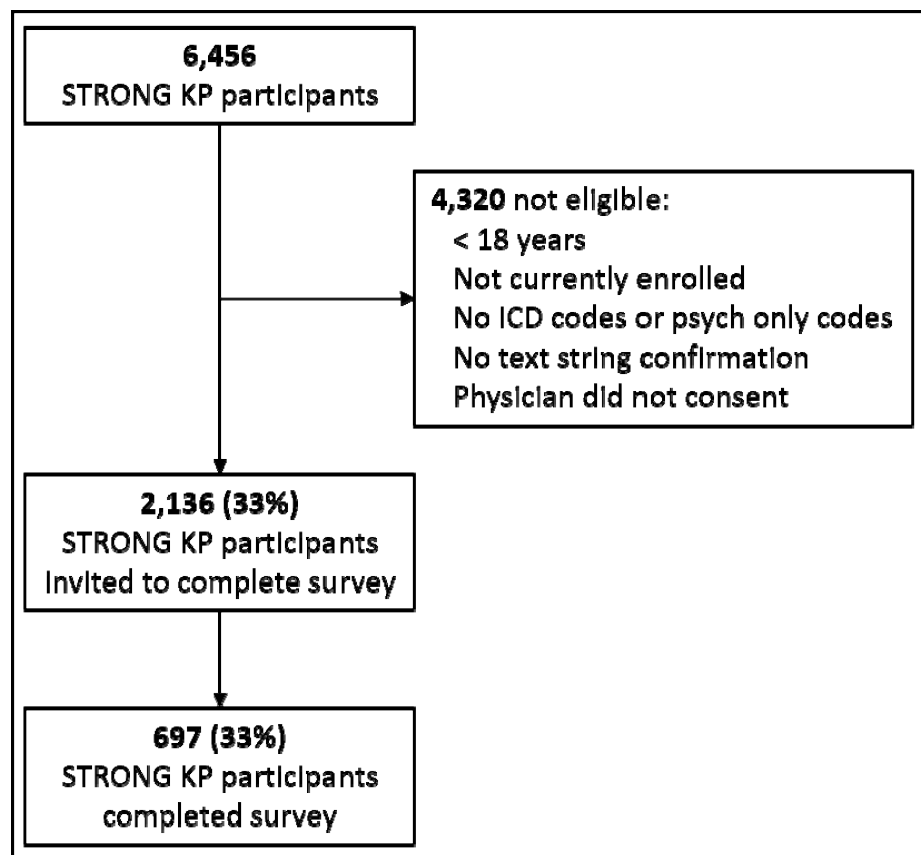
The survey eligibility criteria included the following: (1) aged 18 or older; (2) current enrollment in 1 of the participating health plans; (3) at least 1 *ICD-9* diagnostic code (refer to Table 3); and (4) text string—confirmed transgender status. We excluded participants from the survey if (1) their *ICD* codes and text strings were limited to mental health records, (2) their Kaiser Permanente physicians did not provide consent for initiating the contact, or (3) in their responses to the screening questions the gender identity was the same as natal sex. The inclusion criterion of having an *ICD-9* code and the exclusion criteria were required by the IRBs to ensure that we do not contact participants who wish to conceal their transgender status.

The physician consent rules differed by site depending on the requirements of the corresponding IRB: The Southern California site allowed passive consent; Kaiser Permanente Georgia invited only those eligible participants who were approved by the site’s endocrinologist specializing in transgender care; and Kaiser Permanente Northern California used a combination of active and passive consent depending on the number of diagnostic codes and evidence of hormone therapy or gender-affirming surgery in the EMR.

The survey data collection took place between June 2014 and June 2016. We sent all initial invitations via regular mail. To protect participant confidentiality the letter referred to the STRONG project as a “study of gender, identity, and health.” The letter included a website and a unique password linked to the study ID. We sent up to 2 reminders to participants who did not respond to the initial invitation. The IRBs at the Southern California and Georgia sites allowed sending reminders via email, which included a link to the study survey. In contrast, Kaiser Permanent Northern California permitted email reminders only to those participants who previously consented to email contact. Participants who completed the survey received 2

electronic \$10 Amazon gift cards. Of the 2136 participants invited to complete the survey, we received 697 (33%) responses (Figure 2). The median time to completion was 44 minutes.

Figure 2. Results of STRONG Survey Recruitment Among Kaiser Permanente Participants



Abbreviations: KP, Kaiser Permanente; psych, psychiatric; STRONG, Study of Transition, Outcomes and Gender.

Participants could request a paper version of the survey from the site-specific study coordinators, whose contact information was provided in the invitation letters. We then sent a paper version by regular mail. Approximately 5% of survey responses were completed in this manner. Instead of the piping questions, which presented 1 item at a time for each medication or procedure, the paper version contained a comprehensive checklist that included all the relevant items. Participants returned the survey to their site coordinators, who then removed all identifying information. Electronic copies were delivered to the Emory study coordinating center, where responses were entered into the online SurveyGizmo system.

Survey Data Analyses

The objectives of these analyses were to describe self-reported gender identity among TM and TF survey respondents and to compare body image, transgender congruence, and satisfaction with “passing status” across categories of participants at different stages of gender affirmation.

We assessed the self-perception of gender identity and expression via a series of questions that were based on sliding scales (see Appendix 6). The male and female identities and masculine and feminine expressions each could be expressed on a scale from 0% to 100%, allowing for nonbinary responses. For example, a person could have a 50% male and 50% female identity, but 0% masculine and 100% feminine expression. Scores on binary (eg, male vs female or masculine vs feminine) scales did not have to add up to 100%, as participants could describe themselves as 100% masculine and 100% feminine or as 0% on both scales.

Based on reported history of gender affirmation, we placed each participant in 1 of the following 5 categories: (1) no gender affirmation therapy to date; (2) hormone therapy only; (3) top surgery (eg, mastectomy or breast augmentation); (4) partial bottom surgery (eg, hysterectomy without vaginectomy or orchiectomy without vaginoplasty); and (5) definitive bottom surgery (eg, vaginectomy or vaginoplasty).

We used the 5-category gender affirmation status as the main independent variable of interest in the analyses assessing determinants of the participants’ transgender congruence, body image, and the passing status as a person of particular gender. We compared the distributions of dependent variables of interest across gender affirmation categories by calculating category-specific median and interquartile range (IQR) values. We examined the differences in the distributions using Kruskal-Wallis tests separately for TM and TF participants.

We used multivariable logistic regression models to further examine the association between gender affirmation therapy and each outcome of interest. For the TCS and the body image scale, we defined the binary outcome of interest as the total score being less than the median value. For the passing status variable, we defined the outcome as a positive difference

between the desired and the current passing score. The covariates in the model included age, study site, race, TM/TF status, and receipt of procedures aimed at changing secondary health characteristics (eg, laryngeal shave or facial electrolysis).

To address the effect of survey nonresponse on study results, we replicated each logistic regression analysis using weighted models. The weights for the models represented inverse selection probabilities. In this method, each survey respondent is assigned a weight that corresponds to the inverse of the probability that another invited cohort member with the same set of independent variables would have completed the survey. We obtained the selection probabilities from a separate logistic model, which included all STRONG cohort members who were invited to participate in the survey. The binary dependent variable in this model was response to the survey (yes or no), and independent variables included age, TM/TF status, race, study site, and receipt of hormone therapy and gender-affirming surgery. The analyses are then rerun using the inverse probabilities as the weight for each survey respondent. As a result, each subgroup of eligible participants that appears systematically underrepresented in the analysis data set is given a greater weight to allow correcting for nonresponse in the final model.

We expressed the results of both weighted and unweighted multivariable analyses as adjusted PRs and corresponding 95% CIs using the rlogist procedure in the SAS-callable SUDAAN statistical software package.⁷²

We also used the survey data to compare the self-reported receipt of hormone therapy and gender-affirming surgery with the EMR-derived data using methods applied in our previous studies.^{83,84} After linking the survey responses to the EMR via the same unique study ID, we characterized each participant as having received hormone therapy and surgery based on the clinical records and the self-report. If the EMR and the self-report were in agreement, we considered the data concordant.

We assessed the sensitivities and specificities of the EMR-derived treatment information using survey responses as the “gold standard.” In most previous studies (including ours),⁸³

medical records are considered more reliable than self-reports. In this case, however, we argue that study participants will be more likely to accurately document their gender affirmation treatment because some of this treatment would have been received outside their usual care delivery system and, therefore, missed in the EMR.

Methods of the VA Study

VA Study Design and Settings

We designed this part of the STRONG project as a retrospective cohort study of transgender veterans who received care through the national VA system. Unlike the Kaiser Permanente EMR study, which ascertained the cohort through 2014 but extended follow-up through 2016, the VA EMR cohort was ascertained through April 2017 and there was no prospective follow-up component. The VA EMR data for this study include 5 elements: (1) the VA Corporate Data Warehouse; (2) the Medical SAS data sets maintained by the VA Office of Information at the Austin Information Technology Center; (3) the Pharmacy Benefits Management Database, which covers all prescriptions dispensed within the VA system; (4) the Decision Support System data on laboratory test results, radiology procedures, and other related clinical information; and (5) the Beneficiary Identification and Records Locator System, which maintains vital status information and combines death dates from all sources currently available to VA researchers. All data sets are accessible through the VA Informatics and Computing Infrastructure, which receives updates on a near real-time basis.

Difficulties of Gaining Access to the VA Data

Unlike the Kaiser Permanente-based part of the STRONG project, the VA analyses were delayed for several years. The VA Research and Development (R&D) application had to be resubmitted several times for reasons beyond our control, each time delaying the review by several months. Even after we received the R&D approval (in April 2016), the actual access to the VA data via VINCI interface was not granted until April 2017 (less than 3 months before the end of the project).

Another limitation of the VA component of the project is that the data could be accessed only via the VINCI interface. For this reason, it is currently not possible to combine the VA and the Kaiser Permanente EMR data.

Ascertainment of Transgender and Reference Cohorts at the VA

As the VA data cover the period 2000-2017, we were able to use both *ICD-9* and *ICD-10* codes. Eligible participants included veterans who had diagnostic *ICD-9* codes of 302.50 to 302.53, 302.85, or 302.6, or *ICD-10* codes of F64.1, F64.2, or F64.9.

We defined the index date for the VA cohort as the date the diagnostic code of interest was first recorded in the EMR. From the methodological point of view, an important limitation of the VA data is lack of access to text strings, which restricted our ability to perform cohort validation and ascertain gender identity. For this reason, we ascertained TM/TF status by searching for *ICD* and CPT codes that correspond to natal sex-specific diagnoses, procedures, or tests (Appendix 3).

We matched up to 10 male and 10 female VA patients without evidence of transgender diagnoses to each member of the VA transgender cohort on year of birth, race/ethnicity, and utilization during the year of the index date. The 10:1 ratio for both male and female reference cohorts was needed to allow exclusions of some referents for certain types of analyses. For example, in the analyses of cancer incidence participants had to be excluded if they had a history of cancer before the index date. Having a 10:1 ratio ensured that each transgender participant had a sufficient number of referents after exclusions.

An important limitation of the VA data is difficulty of establishing continuous follow-up, because many veterans receive their care outside the VA system. To account for possible differences in VA care utilization, we also matched the transgender and reference cohorts on the quartile of average annual encounters since the index date. The quartile cutoffs were <5, 5 to 10, 11 to 20, and >20 encounters per year.

VA Data Integration

As many veterans receive their care outside the VA system, accurate and complete ascertainment of incident events is also problematic. The 2 notable exceptions are cancer and mortality data, which can be obtained from the VA Tumor Registry and the Vital Statistics Files, respectively. We linked patient identification numbers for both the transgender and the reference VA cohorts to the Tumor Registry Data to identify incident cases of cancer. We used Vital Statistics Files to ascertain deaths from all causes. The available data extended through April 2017.

VA Data Analyses

Due to time restrictions, difficulties of data access, and the inherent limitations of the VA EMR (see the Discussion section), the analyses for this component of the STRONG project were limited to 2 types of outcomes—all-cause mortality and cancer incidence. We excluded from the mortality analysis participants whose date of death preceded or coincided with the index date, and we excluded from the analyses of cancer incidence participants with evidence of prevalent cancer at the index date.

In the mortality analyses we followed all participants from index date until death or the last evidence of care utilization. In the cancer incidence analyses, we followed participants until the first occurrence of a cancer diagnosis or the most recent care utilization date.

We calculated mortality and cancer incidence rates as the number of events per 100 000 person-years and we estimated the corresponding 95% CIs based on the Byar Poisson approximation method. We calculated the cancer incidence rates in TM and TF cohorts for all cancers combined. As the TM cohort included relatively few participants, we examined only TF cohort data for specific cancer sites. We examined mortality in the transgender and reference cohorts by constructing Kaplan-Meier survival curves. In addition, in all analyses we compared transgender cohort participants with the matched reference cohorts using Cox proportional hazard models. We expressed the results of the Cox models as adjusted HRs and corresponding 95% CIs.

RESULTS

Results of Kaiser Permanente EMR Cohort Analyses

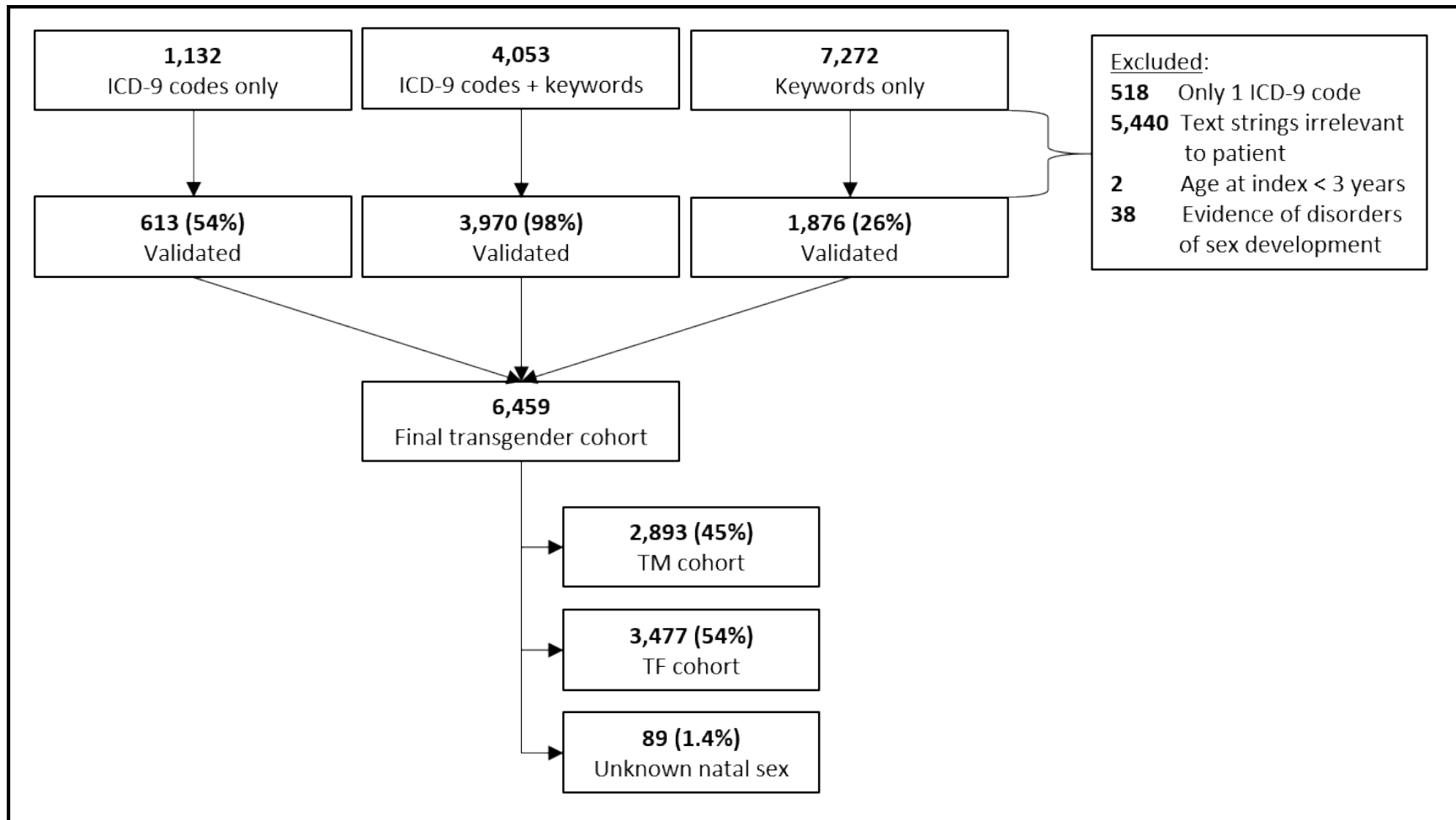
Kaiser Permanente EMR Cohort Description

Initial review of the Kaiser Permanente EMRs identified 12 457 potential transgender individuals. Of these, 7272 (58%) were identified through keywords only, 1132 (9%) through *ICD-9* codes only, and the remaining 4053 (33%) from both *ICD-9* codes and keywords (Figure 3). Among these candidates, 6459 were confirmed as transgender: 10% from *ICD-9* codes alone, 29% from keywords alone, and 61% from both codes and keywords. Based on validation results, the positive predictive values for keywords, diagnostic codes, and both were 26%, 54%, and 98%, respectively. The leading reason for noneligibility was the use of a keyword (eg, *transgender*) referring not to the patient, but to the patient's relative or partner. In other situations, the keywords of interest were used as part of standard text, such as when listing indications for hormone use. We successfully determined natal sex and/or gender identity for all but 89 (1.4%) of the transgender cohort members.

We matched the transgender cohort to 127 668 enrollees with no evidence of transgender status. Of those, 63 855 were women and 63 813 were men.

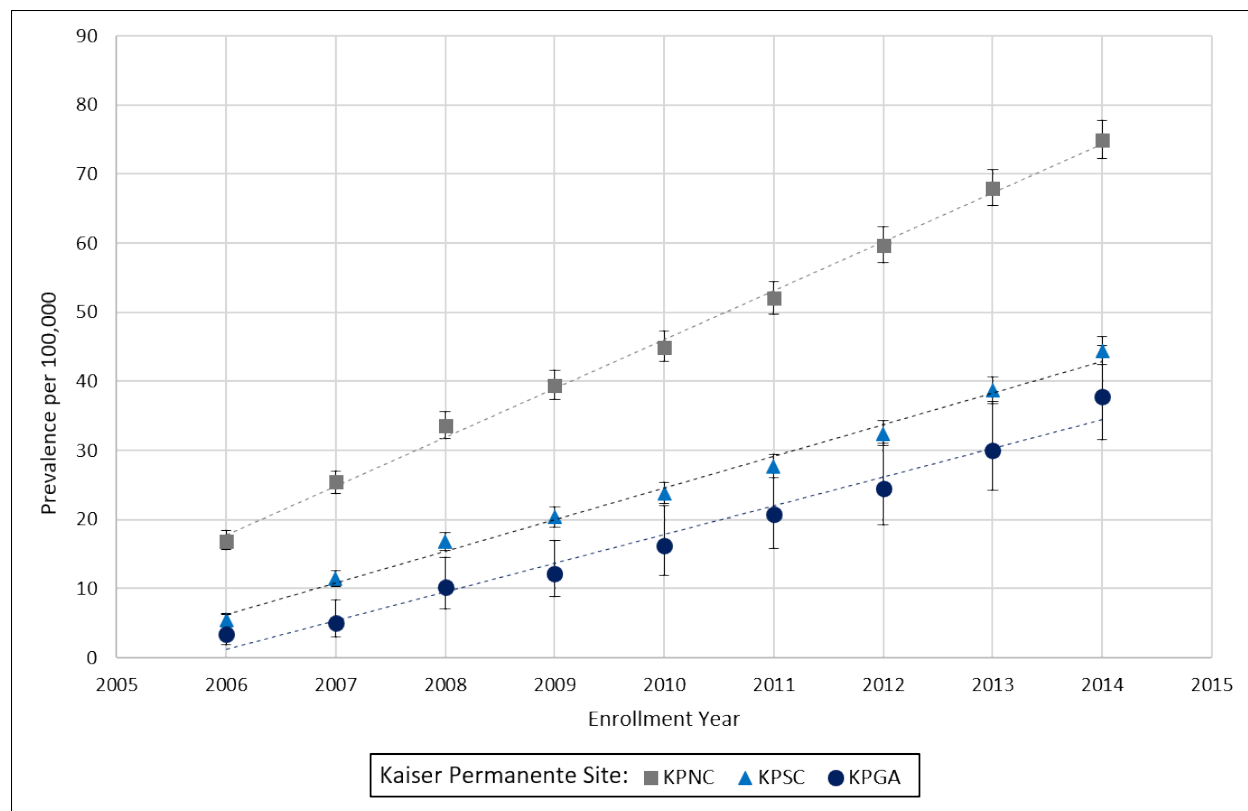
Figure 4 displays proportions of transgender enrollees over time at each of the 3 participating sites. In 2006, the prevalence estimates (95% CIs) per 100 000 enrollees were 3.5 (1.9-6.3), 5.5 (4.8-6.4), and 17 (16-19) in Georgia, Southern California, and Northern California, respectively. By 2014, the corresponding estimates increased to 38 (32-45) in Georgia, 44 (42-46) in Southern California, and 75 (72-78) in Northern California. The composition of the transgender population has also changed. Whereas in 2006 the TF:TM ratio among newly identified cohort members was approximately 1.7:1, in 2014, the same ratio was 1:1.

Figure 3. Results of STRONG Transgender Cohort Ascertainment and Validation



Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; TM, transmaculine.

Figure 4. Prevalence of Transgender Status by Site and Year of Kaiser Permanente Health Plan Enrollment



Abbreviations: KPGA, Kaiser Permanente Georgia; KPNC, Kaiser Permanente Northern California; KPSC, Kaiser Permanente Southern California.

As shown in Table 5, 59% of all participants were from Northern California, 38% were from Southern California, and fewer than 3% were from Georgia. Regarding race and ethnicity, Blacks and Asians each composed about 8% of the study population, 19% were Hispanics, and 55% were non-Hispanic Whites. Only about a fifth of the overall cohort (17% of TF and 26% of TM participants) were under the age of 18 years at the index date. Compared with TF, TM participants were younger (76% vs 53% under the age of 36) and included a greater proportion of participants who were obese (31% vs 22%). Proportions of smokers, insurance status, and area-based measures of education were similar in TM and TF study participants.

Nearly two-thirds of the transgender cohort had some evidence of gender-affirming treatment (Table 6). Approximately 55% of all transgender cohort members had evidence of hormone therapy received at Kaiser Permanente. This proportion was slightly higher in TF

(58%) than in TM (52%) participants. About 23% of the transgender cohort had some evidence of gender affirmation surgery. Top surgery receipt at Kaiser Permanente was far more common among TM cohort members than among their TF counterparts (12% vs 0.3%). Similar proportions of TM and TF cohorts had genital operations (4% vs 5%) or procedures aimed at altering other secondary sex characteristics (11%).

Rates of Acute Cardiovascular Events Rates in Relation to Hormone Use in the Kaiser Permanente Cohort

After an average 4 years of follow-up, the TF cohort had an increase in postindex date incidence of VTE compared with either reference cohort, and the difference appeared to be more pronounced with increased follow-up (Figure 5A-C). For ischemic stroke, the incidence was about the same in all 3 cohorts. The incidence of myocardial infarction was higher in the TF cohort than in reference females, but there was no difference compared with reference males.

In the analyses limited to TF persons who initiated estrogen therapy after the index date and their matched reference cohorts (Figure 5D-F), the rates of myocardial infarction were similar across the 3 groups. In contrast, the incidence compared with either reference cohort was quite pronounced for VTE and ischemic stroke, with a discernible inflexion point at about 6 years of follow-up.

Table 5. Characteristics of the STRONG Kaiser Permanente Transgender Cohort

Participant characteristics	Overall transgender cohort, n (Col %)	TF cohort, n (Col %)^a	TM cohort, n (Col %)^a
Kaiser Permanente site			
Northern California	3842 (59)	1949 (56)	1831 (63)
Southern California	2443 (38)	1433 (41)	983 (34)
Georgia	174 (2.7)	95 (2.7)	79 (2.7)
Race/ethnicity			
Non-Hispanic White	3534 (55)	1830 (53)	1669 (58)
Non-Hispanic Black	510 (7.9)	248 (7.1)	256 (8.8)
Asian	516 (8.0)	305 (8.8)	204 (7.1)
Hispanic	1232 (19)	710 (20)	503 (17)
Other/unknown	667 (10)	384 (11)	261 (9.0)
Age, y^b			
3-17	1347 (21)	588 (17)	745 (26)
18-25	1431 (22)	655 (19)	753 (26)
26-35	1330 (21)	600 (17)	708 (24)
36-45	940 (15)	578 (17)	347 (12)
46-55	779 (12)	552 (16)	219 (7.6)
>55	632 (10)	504 (14)	121 (4.2)
Smoking status^b			
Current	1011 (16)	506 (15)	489 (17)
Former	874 (14)	462 (13)	401 (14)
Never	4031 (62)	2197 (63)	1796 (62)
Unknown	543 (8.4)	312 (9.0)	207 (7.2)
BMI^b			
Underweight	150 (2.3)	96 (2.8)	52 (1.8)
Normal weight	2405 (37)	1356 (39)	1026 (35)
Overweight	1648 (26)	915 (26)	710 (25)
Obese	1692 (26)	779 (22)	886 (31)
Unknown	564 (8.7)	331 (10)	219 (7.6)

Participant characteristics	Overall transgender cohort, n (Col %)	TF cohort, n (Col %) ^a	TM cohort, n (Col %) ^a
Medicaid status^b			
Yes	265 (4.1)	138 (4.0)	123 (4.3)
No	6032 (93)	3253 (94)	2703 (93)
Unknown	162 (2.5)	86 (2.5)	67 (2.3)
Census-level education status			
<30% of residents have high school or less	2635 (41)	1406 (40)	1194 (41)
30%-50% of residents have high school or less	2234 (35)	1218 (35)	980 (34)
>50% have high school or less	1467 (23)	795 (22)	655 (23)
Unknown	123 (1.9)	58 (1.7)	64 (2.2)
Total, n row (%)	6459 (100)	3477 (54)	2893 (45)

Abbreviations: BMI, body mass index; Col, column; STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; TM, transmasculine.

^aExcludes 89 persons with unknown natal sex.

^bAssessed at index date (date of first evidence of transgender status in EMRs).

Table 6. Gender Affirmation Status of the STRONG Kaiser Permanente Transgender Cohort Members

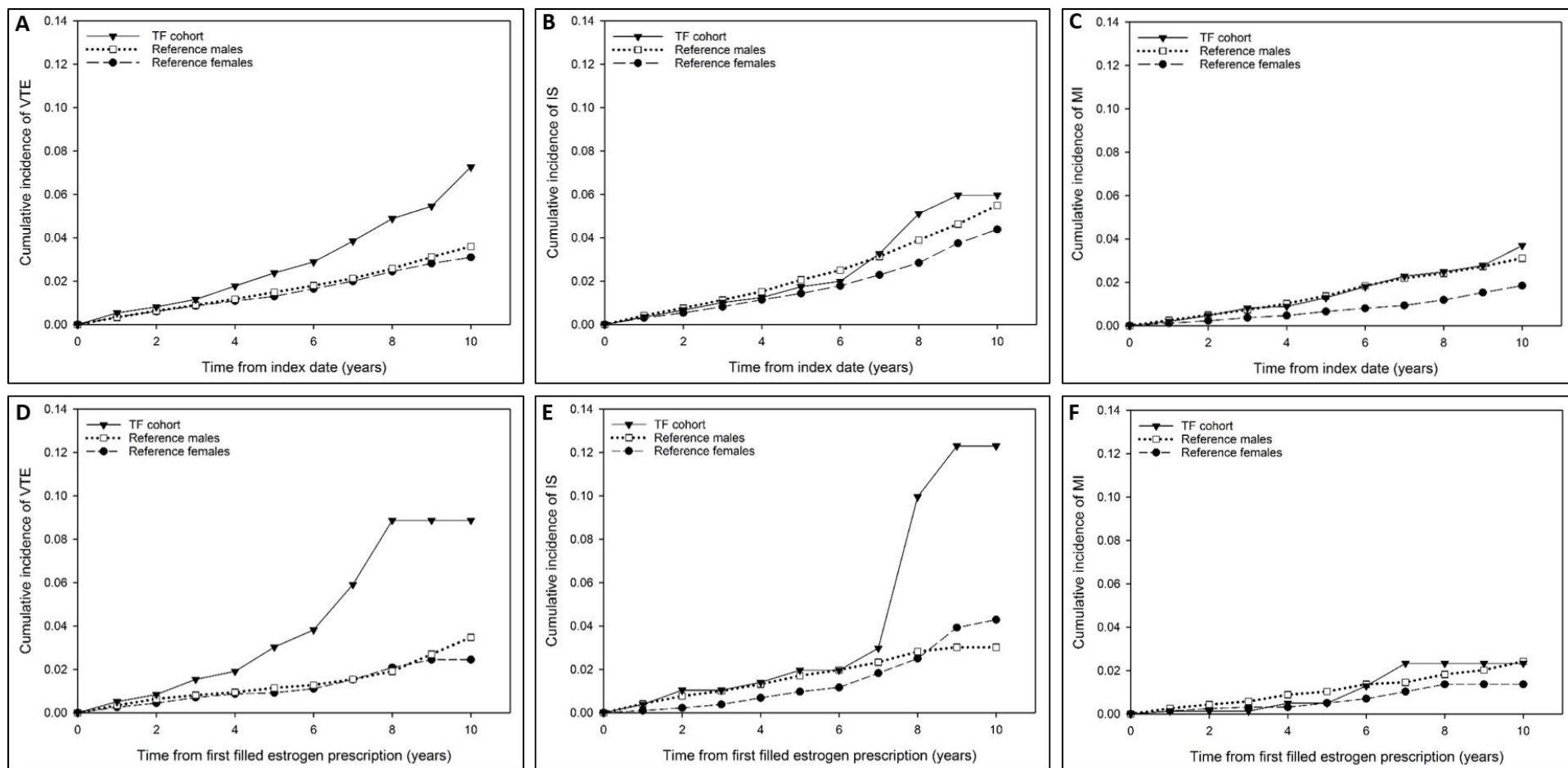
Gender affirmation	Overall transgender cohort	TF cohort ^a	TM cohort ^a
Evidence and type	n (Col %)	n (Col %)	n (Col %)
Evidence of treatment			
Any ^b	4043 (63)	2143 (62)	1793 (62)
None	2416 (37)	1334 (38)	1100 (38)
Cross-sexhormone therapy			
Specific evidence at Kaiser Permanente	3546 (55)	2031 (58)	1515 (52)
Evidence in the text only	187 (2.9)	112 (3.2)	72 (2.5)
No evidence	2726 (42)	1334 (38)	1306 (45)
Gender affirmation surgery			
Top surgery at Kaiser Permanente only	369 (6)	12 (0.3)	357 (12)
Orchiectomy at Kaiser Permanente with or without top	52 (0.8)	52 (1.5)	0 (0.0)
Hysterectomy and/or oophorectomy at Kaiser Permanente with or without top	311 (4.8)	0 (0.0)	311 (11)
Genital reconstruction at Kaiser Permanente with or without other surgery	299 (4.6)	181 (5.2)	118 (4.1)
Evidence in the text only	432 (6.7)	253 (7.3)	179 (6.2)
No evidence	4996 (77)	2979 (86)	1928 (67)
Procedures to alter secondary sex characteristics			
Specific evidence at Kaiser Permanente	678 (10)	385 (11)	293 (10)
Evidence in the text only	58 (0.9)	52 (1.5)	6 (0.2)
No evidence	5723 (89)	3040 (87)	2594 (90)
Total	6459 (100)	3477 (100)	2893 (100)

Abbreviations: Col, column; STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; TM, transmasculine.

^aExcludes 89 persons with unknown natal sex.

^bIncludes nonspecific history and referral for treatment.

Figure 5. Incidence of VTE, IS, and MI Among TF Cohort Members Overall (A-C) and TF Members Who Initiated Estrogen Therapy After the Index Date (D-F) Compared With Matched Reference Cohorts



Abbreviations: IS, ischemic stroke; MI, myocardial infarction; TF, transfeminine; VTE, venous thromboembolism.

The average incidence rates (per 1000 person-years) across the entire follow-up among TF for VTE, ischemic stroke, and myocardial infarction were 5.5, 4.8, and 2.9, respectively. The proportional hazard assumptions were violated in the analyses for VTE and ischemic stroke among the estrogen initiation subcohort. For this reason, the HR estimates for both VTE and ischemic stroke in this category of participants are presented separately for ≤ 6 and > 6 years of follow-up. As shown in Table 7, the HR estimates—after adjusting for BMI, history of acute cardiovascular events of interest, blood pressure, blood cholesterol, and smoking—in the earlier follow-up period were closer to the null compared with the corresponding estimates in the later period. This was consistent with the 6-year inflexion point observed on the cumulative incidence curves. The HR estimates were even higher when we restricted the estrogen initiation subcohort to TF members on oral estrogen.

The rates of myocardial infarction were similar when we compared TF persons with cisgender male referents (HR, 0.9; 95% CI, 0.7-1.4), but the difference was evident (HR, 1.6; 95% CI, 1.1-2.4) when the reference group was composed of cisgender females. The corresponding estimates limited to the estrogen initiation subcohort were imprecise due to few myocardial infarction events ($n = 4$) in the exposed group.

The cumulative incidence curves for all 3 acute cardiovascular events in the TM cohort (mean follow-up, 3.6 years) closely followed those of the 2 matched reference cohorts (Figure 6). In the multivariable survival analyses, the HR (95% CI) estimates for VTE in the overall TM cohort using cisgender males and cisgender females as the reference categories were 1.1 (95% CI, 0.7-1.8) and 1.0 (95% CI, 0.6-1.5), respectively. The corresponding results were 0.8 (95% CI, 0.5-1.3) and 0.9 (95% CI, 0.5-1.5) for ischemic stroke and 0.7 (95% CI, 0.4-1.4) and 1.4 (95% CI, 0.7-3.0) for myocardial infarction (Table 8). The analyses restricted to the testosterone initiation subcohort were limited due to relatively few events.

The results of sensitivity analyses were very similar to those of the main analyses, although the precision of some estimates decreased due to fewer events. The imputation of missing values did not appreciably affect the HR estimates (Appendix 4).

Table 7. Incidence Rates and Adjusted Hazard Ratios for Acute Cardiovascular Events Among TF STRONG Kaiser Permanente Cohort Members Compared With Matched Reference Cohorts (2006-2016)

Population of interest	Incidence rate	Adjusted hazard ratio (95% CI) ^a	
	(95% CI) ^b	vs reference males	vs reference females
Venous thromboembolism			
Overall cohort (61 events)	5.5 (4.3-7.0)	1.4 (1.1-1.9)	1.6 (1.2-2.1)
Estrogen initiation subcohort, 0-6 y of follow-up (13 events)	5.5 (3.2-9.5)	1.9 (1.0-3.6)	2.1 (1.1-4.0)
Estrogen initiation subcohort, ≥6 y of follow-up (4 events)	18.9 (7.1-50.3)	4.7 (1.4-16.2)	5.6 (1.7-18.3)
Oral estrogen initiation subcohort, 0-6 y of follow-up (10 events) ^c	5.9 (3.2-11.0)	2.0 (1.0-4.0)	1.9 (0.9-3.9)
Oral estrogen initiation subcohort, ≥6 y of follow-up (4 events) ^c	26.7 (10.0-71.0)	7.7 (2.0-29.8)	10.5 (2.8-39.5)
Ischemic stroke			
Overall cohort (54 events)	4.8 (3.7-6.3)	1.0 (0.7-1.3)	1.2 (0.9-1.5)
Estrogen initiation subcohort, 0-6 y of follow-up (9 events)	3.8 (2.0-7.3)	1.1 (0.5-2.2)	1.8 (0.8-3.7)
Estrogen initiation subcohort, ≥6 y of follow-up (8 events)	36.2 (18.1-72.4)	6.8 (2.4-18.9)	3.3 (1.4-7.7)
Oral estrogen initiation subcohort, 0-6 y of follow-up (6 events) ^c	3.5 (1.6-7.8)	1.0 (0.4-2.4)	1.9 (0.7-4.7)
Oral estrogen initiation subcohort, ≥6 y of follow-up (4 events) ^c	23.8 (8.9-63.5)	6.8 (1.6-28.1)	2.6 (0.7-10.3)
Myocardial infarction			
Overall cohort (33 events)	2.9 (2.1-4.1)	0.9 (0.7-1.4)	1.6 (1.1-2.4)
Overall estrogen initiation subcohort (4 events)	1.5 (0.6-4.1)	0.7 (0.2-1.9)	1.3 (0.5-3.8)
Overall oral estrogen initiation subcohort (2 events) ^c	1.1 (0.3-4.3)	0.5 (0.1-2.2)	1.1 (0.3-5.1)

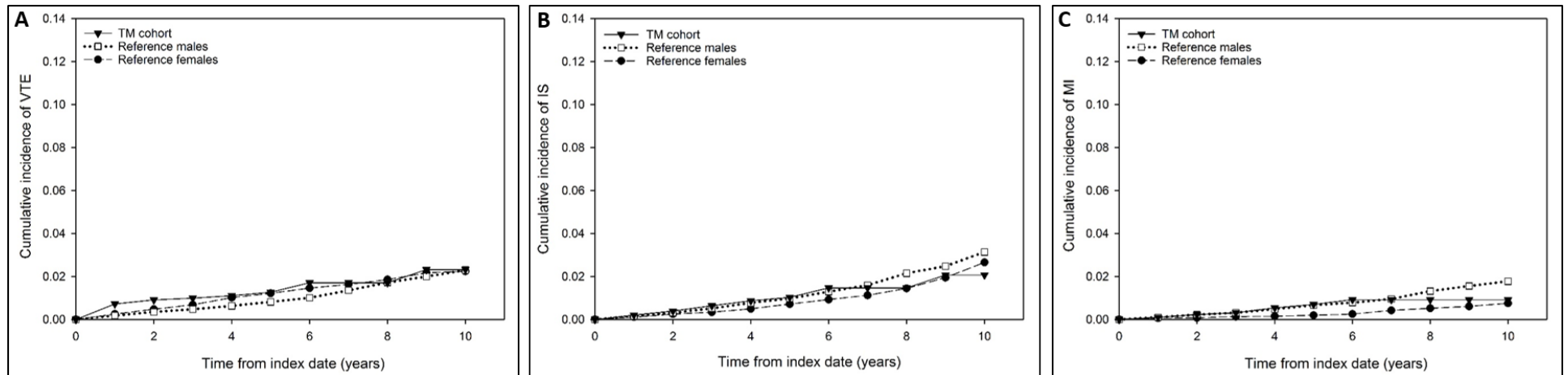
Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine.

^aMatched on age, race, site, and membership year of index date; adjusted for history of event, body mass index, smoking status, blood pressure, and total blood cholesterol.

^bCalculated as number of cases per 1000 person-years.

^cExtended models due to violation of proportional hazards assumptions.

Figure 6. Incidence of VTE, IS, and MI Among TM Cohort Members Overall (A-C) Compared With Matched Reference Cohorts



Abbreviations: IS, ischemic stroke; MI, myocardial infarction; TM, transmasculine; VTE, venous thromboembolism.

Table 8. Incidence Rates and Adjusted Hazard Ratios for Acute Cardiovascular Events Among TM STRONG Kaiser Permanente Cohort Members to Matched Reference Cohorts^a (2006-2016)

Population of interest	Incidence rate (95% CI) ^a	Adjusted hazard ratio (95% CI) ^b	
		vs reference males	vs reference females
Venous thromboembolism			
Overall cohort (23 events)	3.1 (2.0-4.6)	1.1 (0.7-1.8)	1.0 (0.6-1.5)
Overall testosterone initiation subcohort (4 events)	3.3 (1.3-8.9)	1.7 (0.6-5.3)	1.0 (0.4-3.1)
Ischemic stroke			
Overall cohort (16 events)	2.1 (1.3-3.5)	0.8 (0.5-1.3)	0.9 (0.5-1.5)
Overall testosterone initiation subcohort (2 events)	1.7 (0.4-6.7)	1.3 (0.3-6.5)	1.1 (0.2-5.4)
Myocardial infarction			
Overall cohort (9 events)	1.2 (0.6-2.3)	0.7 (0.4-1.4)	1.4 (0.7-3.0)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TM, transmasculine.

^aCalculated as number of cases per 1000 person-years.

^bMatched on age, race, site, and membership year of index date; adjusted for history of event, body mass index, smoking status, blood pressure, and total blood cholesterol.

Cancer Incidence in the Kaiser Permanente Cohort

The average duration of follow-up in these analyses was 4 years for TF participants and 3.6 years for TM participants. As shown in Table 9, overall cancer incidence was the same when comparing TF and TM participants with their matched reference groups. Compared with reference males, incidence rates among TF participants were lower for prostate cancer (HR, 0.4; 95% CI, 0.2-0.9) and higher for endocrine gland cancers (HR, 5.2; 95% CI, 1.8-15.1) and viral infection–induced cancers (HR, 2.0; 95% CI, 1.0-3.9). TF participants also experienced higher incidence rates for lymphatic and hematopoietic cancers (HR, 3.0; 95% CI, 1.4-6.3) compared with reference females.

TM participants had much higher rates of breast cancer relative to male referents, but there was no increase compared with the matched female cohort. We observed increases in smoking-related and viral infection–induced cancers among TM participants relative to only

reference males; both results were entirely attributable to cervical cancers. The results for other cancer sites and categories demonstrated no clear differences in either TM participants or TF participants relative to the reference groups.

Mental Health Status at Index Date in the Kaiser Permanente Cohort

The data for TF participants included 161 children under the age of 10 years, 427 children and adolescents in the 10- to 17-year age group, and 2889 adults. The corresponding age-specific numbers for TM participants were 90, 655, and 2148, respectively.

As shown in Tables 10 and 11, the most common diagnostic categories among both TM and TF children aged 3 to 9 years were attention deficit disorders and anxiety disorders. The PR estimates for anxiety disorders ranged from 4.4 (95% CI, 2.6-7.4) to 21 (95% CI, 8.8-51) depending on the time window before the index date and the reference group. The corresponding PR (95% CI) estimates for attention deficit disorders ranged from 2.8 (1.6-4.9) to 13 (5.9-27). Among TF participants, 5% had a diagnosis of autism spectrum disorder; however, we observed no cases among their TM counterparts. For most diagnostic categories, we observed the most pronounced differences relative to referent groups within the last 6 months before the index date. Among TF participants, we found the highest PR estimate for conduct/disruptive disorders (79; 95% CI, 10-631) relative to reference females. Among TM, we found the highest PR estimate for depressive disorders (40; 95% CI, 8.6-184) relative to reference males. Fewer than 5 total inpatient encounters were associated with any of the mental health conditions in this age group, and for this reason further analyses assessing prevalence of hospitalizations by diagnostic category were not possible.

Table 9. Cancer Incidence Rates and Adjusted Hazard Ratios for TF and TM STRONG Kaiser Permanente Cohort Participants Aged ≥18 Years at Index Date Compared With Matched Referent Males and Females^a

Cancer categories	Incidence rate (95% CI) per 100 000 person-years	Adjusted hazard ratio (95% CI)	
		vs reference males	vs reference females
TF participants (n = 2793) ^a			
Any incident cancer (54 cases)	495 (379-646)	1.0 (0.7-1.3)	1.0 (0.7-1.3)
Prostate cancer (8 cases)	72 (36-145)	0.4 (0.2-0.9)	
Intestinal cancer (5 cases)	45 (19-109)	1.0 (0.4-2.5)	1.4 (0.5-3.5)
Melanoma of the skin (6 cases)	54 (24-121)	0.9 (0.4-2.0)	1.0 (0.4-2.3)
Lymphatic and hematopoietic cancers (9 cases)	81 (42-156)	1.5 (0.7-3.0)	3.0 (1.4-6.3)
Endocrine gland cancers (5 cases) ^b	45 (19-109)	5.2 (1.8-15.1)	1.5 (0.6-4.0)
Smoking-related cancers (8 cases) ^c	72 (36-145)	0.6 (0.3-1.3)	0.7 (0.3-1.4)
Screening detectable cancers (18 cases) ^d	164 (103-260)	0.6 (0.4-1.0)	
Viral infection–induced cancers (10 cases) ^e	90 (49-168)	2.0 (1.0-3.9)	1.6 (0.8-3.1)
TM participants (n = 2099)			
Any incident cancer (25 cases)	337 (228-499)	1.3 (0.8-1.9)	1.0 (0.6-1.4)
Breast cancer (7 cases)	94 (45-197)	82 (10-673)	0.9 (0.4-1.9)
Cervical cancer (6 cases)	80 (36-179)		1.2 (0.5-2.9)
Smoking-related cancers (9 cases) ^c	121 (63-232)	2.7 (1.3-5.6)	1.2 (0.6-2.5)
Screening detectable cancers (14 cases) ^f	188 (111-318)		0.9 (0.5-1.5)
Viral infection–induced cancers (6 cases) ^g	80 (36-179)	2.7 (1.1-6.7)	0.9 (0.4-2.2)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; TM, transmasculine.

^aExcludes participants with history of cancer before the index date, matched on year of birth, enrollment at index date, race, and site; adjusted for BMI and smoking status (reported analyses are limited to cancer categories with at least 5 cases).

^bIncludes cancers of the thyroid gland, adrenal gland, pituitary gland, and pineal gland.

^cIncludes cancers of the lung/bronchus, trachea, esophagus, larynx and other head/neck, cervix, stomach, pancreas, urinary bladder, kidney, and renal pelvis.

^dIncludes cancers of the colorectum, melanoma of the skin, and prostate; the analyses are natal-sex specific.

^eIncludes cancers of the anus, base of tongue/tonsil, oropharynx, nasopharynx, pharynx, liver, and Kaposi sarcoma, non-Hodgkin lymphoma, and Hodgkin lymphoma.

^fIncludes cancers of the cervix, breast, colorectum, and melanoma of the skin; the analyses are natal-sex specific.

^gAll cancers of the cervix.

Table 10. Prevalence of Mental Health Conditions in TF Children Aged 3 to 9 Years Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	51 (31.7)	3.0 (2.3-3.9)	5.9 (4.2-7.7)
12 mo before index date	48 (29.8)	4.6 (3.4-6.2)	10.1 (7.0-14.6)
6 mo before index date	46 (28.6)	6.0 (4.4-8.4)	13.0 (8.7-19.6)
Anxiety disorders			
Ever before index date	19 (11.8)	4.4 (2.6-7.4)	6.3 (3.6-10.9)
12 mo before index date	17 (10.6)	8.5 (4.5-15.9)	18.8 (8.5-41.4)
6 mo before index date	15 (9.3)	15.0 (6.8-32.7)	21.3 (8.8-51.4)
Autism spectrum disorders			
Ever before index date	8 (5.0)	2.2 (1.0-4.6)	11.3 (4.2-30.9)
12 mo before index date	8 (5.0)	2.9 (1.3-6.1)	19.9 (6.0-65.2)
6 mo before index date	8 (5.0)	3.8 (1.7-8.4)	19.9 (6.0-65.2)
Attention deficit disorder			
Ever before index date	24 (14.9)	3.3 (2.1-5.1)	6.1 (3.8-9.9)
12 mo before index date	23 (14.3)	4.1 (2.6-6.5)	7.9 (4.7-13.3)
6 mo before index date	22 (13.7)	5.0 (3.1-8.1)	10.9 (6.1-19.6)
Conduct/disruptive disorders			
Ever before index date	12 (7.5)	3.2 (1.7-5.9)	13.2 (5.7-30.9)
12 mo before index date	11 (6.8)	7.8 (3.6-17.0)	54.5 (12.2-244.1)
6 mo before index date	8 (5.0)	8.0 (3.2-19.9)	79.4 (10.0-630.9)
Depressive disorders			
Ever before index date	9 (5.6)	6.4 (2.8-14.6)	7.4 (3.2-17.4)
12 mo before index date	8 (5.0)	11.4 (4.2-31.0)	13.2 (4.7-37.7)
6 mo before index date	6 (3.7)	8.5 (2.9-25.1)	11.9 (3.7-38.6)
Eating disorders			
Ever before index date	^a	3.6 (1.2-11.2)	6.6 (1.9-23.2)
12 mo before index date	^a	6.7 (1.1-39.5)	19.9 (1.8-217.7)
6 mo before index date	^a	10.0 (0.6-158.6)	9.9 (0.6-157.9)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, trans feminine.

^aFor fewer than 5 cases, numbers are not reported.

Table 11. Prevalence of Mental Health Conditions in TM Children Aged 3 to 9 Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI) ^a	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	31 (34.4)	3.3 (2.3-4.6)	5.4 (3.7-7.9)
12 mo before index date	26 (28.9)	4.3 (2.9-6.5)	7.8 (4.9-12.4)
6 mo before index date	26 (28.9)	5.9 (3.8-9.0)	10.7 (6.4-17.8)
Anxiety disorders			
Ever before index date	14 (15.6)	6.3 (3.4-11.9)	6.0 (3.2-11.3)
12 mo before index date	11 (12.2)	8.4 (3.9-18.2)	9.9 (4.4-22.1)
6 mo before index date	9 (10.0) ^b	8.9 (3.7-21.4)NC	11.1 (4.4-28.1)NC
Autism spectrum disorders			
Ever before index date	0	NC	NC
12 mo before index date	0	NC	NC
6 mo before index date	0	NC	NC
Attention deficit disorder			
Ever before index date	14 (15.6)	3.6 (2.0-6.3)	8.6 (4.4-17.1)
12 mo before index date	14 (15.6)	4.2 (2.3-7.6)	12.6 (5.9-26.8)
6 mo before index date	7 (7.8)	5.8 (2.3-14.3)	11.5 (4.0-33.5)
Conduct/disruptive disorders			
Ever before index date	*	13.2 (3.0-58.1)	19.7 (3.7-106.3)
12 mo before index date	*	13.2 (3.0-58.1)	19.7 (3.7-106.3)
6 mo before index date	10 (11.1)	24.8 (7.9-77.4)	12.3 (5.0-30.5)
Depressive disorders			
Ever before index date	10 (11.1)	24.8 (7.9-77.4)	12.3 (5.0-30.5)
12 mo before index date	8 (8.9)	26.4 (7.1-97.9)	19.7 (6.1-64.3)
6 mo before index date	8 (8.9)	39.6 (8.6-183.9)	26.3 (7.1-97.4)
Eating disorders			
Ever before index date	0	NC	NC
12 mo before index date	0	NC	NC
6 mo before index date	0	NC	NC

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TM, transmasculine.

^aNC due to 0 cases among transgender participants.

^bFor fewer than 5 cases, numbers are not reported.

Tables 12 and 13 summarize prevalence of mental health diagnoses among TM and TF children and adolescents aged 10 to 17 years. As in the younger (aged 3-9) age group, anxiety disorders remained common with an “ever” prevalence of nearly 40% in both TF and TM participants. Prevalence of attention deficit disorders among TF children and adolescents was also very common: 25% in TF children and 16% in TM children. An additional high-prevalence diagnostic category in this age group was depressive disorders, found in 62% of TF and 49% of TM participants.

For nearly all diagnostic categories, PR estimates comparing transgender participants to matched reference groups were the highest within 6 months of the index date. The PR estimates among TF relative to female controls were particularly elevated within 6 months of the index date for autism spectrum disorders (246; 95% CI, 33-1812) and psychoses (99; 95% CI, 13-767). The corresponding analyses for TF participants compared with reference males yielded notable PR estimates for suicidal ideation (52; 95% CI, 18-150) and self-inflicted injuries (69; 95% CI, 8.5-559). The prevalence of suicidal ideation and self-inflicted injuries within 6 months before the index date was also much higher when comparing TM participants with reference males, with PR (95%) estimates of 42 (22-81) and 138 (33-577), respectively. When compared with reference females, TM participants aged 10-17 experienced particularly pronounced increases in prevalence of psychoses (PR, 30; 95% CI, 12-74) and personality disorders (PR, 30; 95% CI, 8-109).

When prevalence estimates were limited to mental health disorders that required hospitalization, the patterns among children and adolescents aged 10 to 17 years generally remained the same; however, in several instances we could not calculate the PR estimates due to lack of cases in the reference groups (Tables 14 and 15). For example, 7 of 21 TF children diagnosed with suicidal ideation within 6 months before the index date required hospitalization; however, we observed no cases in reference males.

Table 12. Prevalence of Mental Health Conditions in TF Children Aged 10 to 17 Years Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	303 (71.0)	3.0 (2.8-3.3)	3.6 (3.3-3.9)
12 mo before index date	266 (62.3)	5.6 (5.0-6.3)	6.3 (5.6-7.1)
6 mo before index date	253 (59.3)	7.8 (6.8-8.9)	8.6 (7.5-9.8)
Anxiety disorders			
Ever before index date	159 (37.2)	5.0 (4.2-5.9)	4.2 (3.6-4.9)
12 mo before index date	109 (25.5)	10.2 (8.0-13.1)	6.5 (5.2-8.1)
6 mo before index date	106 (24.8)	18.0 (13.3-24.4)	9.2 (7.2-11.8)
Autism spectrum disorders			
Ever before index date	31 (7.3)	3.9 (2.6-5.8)	23.5 (12.4-44.5)
12 mo before index date	25 (5.9)	5.9 (3.6-9.5)	123.1 (29.3-517.8)
6 mo before index date	25 (5.9)	7.7 (4.6-12.9)	246.1 (33.4-1812.0)
Attention deficit disorder			
Ever before index date	107 (25.1)	2.0 (1.7-2.5)	5.3 (4.3-6.5)
12 mo before index date	79 (18.5)	3.2 (2.6-4.1)	7.9 (6.0-10.4)
6 mo before index date	68 (15.9)	3.8 (2.9-4.9)	9.1 (6.6-12.4)
Bipolar spectrum disorder			
Ever before index date	23 (5.4)	9.4 (5.4-16.6)	9.9 (5.6-17.4)
12 mo before index date	18 (4.2)	13.6 (6.7-27.6)	11.8 (6.0-23.3)
6 mo before index date	16 (3.8)	17.5 (7.8-39.4)	14.3 (6.7-30.7)
Conduct/disruptive disorders			
Ever before index date	60 (14.1)	2.8 (2.1-3.7)	6.6 (4.8-9.0)
12 mo before index date	28 (6.6)	4.6 (3.0-7.1)	11.5 (6.7-19.6)
6 mo before index date	22 (5.2)	5.0 (3.0-8.3)	12.0 (6.5-22.3)
Depressive disorders			
Ever before index date	207 (48.5)	5.8 (5.1-6.7)	4.4 (3.9-5.0)
12 mo before index date	179 (41.9)	15.5 (12.5-19.1)	7.5 (6.4-8.9)
6 mo before index date	172 (40.3)	23.5 (18.2-30.4)	10.1 (8.4-12.2)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Eating disorders			
Ever before index date	18 (4.22)	7.39 (4.0-13.5)	3.16 (1.9-5.3)
12 mo before index date	11 (2.6)	10.84 (4.6-25.4)	3.73 (1.9-7.4)
6 mo before index date	11 (2.6)	18.06 (6.7-48.6)	6.02 (2.9-12.7)
Psychoses			
Ever before index date	19 (4.5)	18.7 (8.8-40.0)	11.7 (6.1-22.6)
12 mo before index date	14 (3.3)	17.2 (7.3-40.9)	34.5 (11.4-104.2)
6 mo before index date	10 (2.3)	19.7 (6.8-57.4)	98.5 (12.6-767.3)
Personality disorder			
Ever before index date	10 (2.3)	14.1 (5.4-36.8)	10.9 (4.5-26.8)
12 mo before index date	6 (1.4)	29.6 (6.0-146.0)	29.5 (6.0-145.9)
6 mo before index date	*	19.7 (3.6-107.2)	19.7 (3.6-107.2)
Self-inflicted injuries			
Ever before index date	11 (2.6)	3.9 (1.9-7.7)	4.0 (2.0-8.0)
12 mo before index date	8 (1.9)	39.4 (8.4-185.0)	8.8 (3.4-22.6)
6 mo before index date	7 (1.6)	69.0 (8.5-559.1)	17.2 (5.1-58.6)
Substance abuse disorders			
Ever before index date	33 (7.7)	2.9 (2.0-4.2)	3.5 (2.4-5.1)
12 mo before index date	27 (6.3)	4.2 (2.7-6.4)	5.4 (3.4-8.6)
6 mo before index date	24 (5.6)	5.5 (3.4-9.0)	8.4 (4.9-14.4)
Suicidal ideation			
Ever before index date	32 (7.5)	16.6 (9.5-29.0)	10.5 (6.5-17.1)
12 mo before index date	25 (5.9)	30.8 (14.0-67.8)	15.4 (8.3-28.6)
6 mo before index date	21 (4.9)	51.7 (17.8-150.0)	29.5 (12.6-69.1)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine.

Table 13. Prevalence of Mental Health Conditions in TM Children Aged 10 to 17 Years Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	488 (74.5)	3.0 (2.8-3.2)	3.7 (3.4-3.9)
12 mo before index date	446 (68.1)	5.9 (5.4-6.5)	6.7 (6.1-7.3)
6 mo before index date	429 (65.5)	7.9 (7.1-8.7)	8.7 (7.9-9.6)
Anxiety disorders			
Ever before index date	255 (38.9)	4.9 (4.3-5.6)	4.0 (3.5-4.5)
12 mo before index date	194 (29.6)	11.3 (9.4-13.7)	7.1 (6.0-8.3)
6 mo before index date	175 (26.7)	15.7 (12.5-19.6)	8.7 (7.2-10.5)
Autism spectrum disorders			
Ever before index date	24 (3.7)	1.8 (1.2-2.7)	7.4 (4.4-12.5)
12 mo before index date	19 (2.9)	2.8 (1.7-4.7)	13.4 (6.7-26.6)
6 mo before index date	17 (2.6)	3.4 (1.9-5.8)	16.8 (7.7-36.5)
Attention deficit disorder			
Ever before index date	106 (16.2)	1.3 (1.0-1.5)	3.3 (2.7-4.1)
12 mo before index date	76 (11.6)	1.9 (1.5-2.4)	4.9 (3.8-6.4)
6 mo before index date	69 (10.5)	2.4 (1.8-3.0)	5.8 (4.4-7.7)
Bipolar spectrum disorder			
Ever before index date	34 (5.2)	8.2 (5.2-12.8)	7.6 (4.9-11.8)
12 mo before index date	25 (3.8)	11.7 (6.6-20.8)	13.7 (7.5-25.0)
6 mo before index date	19 (2.9)	11.0 (5.8-21.1)	14.4 (7.2-29.1)
Conduct/disruptive disorders			
Ever before index date	59 (9.0)	1.7 (1.3-2.2)	4.2 (3.1-5.6)
12 mo before index date	31 (4.7)	3.6 (2.4-5.3)	7.1 (4.5-11.2)
6 mo before index date	27 (4.1)	5.3 (3.4-8.4)	10.2 (6.0-17.4)
Depressive disorders			
Ever before index date	403 (61.5)	7.0 (6.4-7.8)	5.7 (5.2-6.2)
12 mo before index date	347 (53.0)	16.7 (14.4-19.5)	10.5 (9.2-11.9)
6 mo before index date	326 (49.8)	22.8 (19.0-27.3)	13.3 (11.5-15.4)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Eating disorders			
Ever before index date	28 (4.3)	5.7 (3.6-9.1)	3.1 (2.1-4.8)
12 mo before index date	22 (3.4)	19.7 (9.6-40.4)	6.8 (4.0-11.6)
6 mo before index date	19 (2.9)	26.7 (11.3-63.3)	8.5 (4.6-15.7)
Psychoses			
Ever before index date	32 (4.9)	11.7 (7.0-19.4)	13.7 (8.1-23.3)
12 mo before index date	26 (4.0)	23.3 (11.6-46.9)	25.6 (12.4-52.9)
6 mo before index date	18 (2.8)	22.2 (9.7-50.7)	29.6 (11.8-74.3)
Personality disorder			
Ever before index date	15 (2.3)	11.4 (5.4-23.8)	7.8 (4.0-15.3)
12 mo before index date	12 (1.8)	23.6 (8.4-66.9)	19.7 (7.4-52.4)
6 mo before index date	9 (1.4)	29.5 (8.0-108.8)	29.6 (8.0-109.0)
Self-inflicted injuries			
Ever before index date	54 (8.2)	13.0 (8.7-19.3)	8.1 (5.7-11.5)
12 mo before index date	39 (6.0)	38.4 (19.3-76.6)	21.4 (12.3-37.1)
6 mo before index date	28 (4.3)	137.8 (32.9-577.2)	19.7 (10.4-37.3)
Substance abuse disorders			
Ever before index date	46 (7.0)	2.3 (1.7-3.2)	3.2 (2.3-4.4)
12 mo before index date	39 (6.0)	3.7 (2.6-5.3)	5.8 (4.0-8.6)
6 mo before index date	34 (5.2)	4.4 (2.9-6.5)	7.8 (5.0-12.1)
Suicidal ideation			
Ever before index date	68 (10.4)	19.1 (12.8-28.5)	10.0 (7.2-13.9)
12 mo before index date	55 (8.4)	28.5 (17.0-47.7)	17.5 (11.4-27.0)
6 mo before index date	47 (7.2)	42.1 (21.9-80.7)	23.2 (13.8-38.9)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TM, transmasculine.

Table 14. Prevalence of Hospitalizations for Mental Health Conditions Among TF Children Aged 10 to 17 Years Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	58 (13.6)	9.9 (6.9-14.0)	8.9 (6.3-12.6)
12 mo before index date	39 (9.1)	25.6 (14.2-46.1)	16.7 (10.1-27.7)
6 mo before index date	33 (7.7)	40.6 (18.9-87.4)	32.5 (16.1-65.5)
Anxiety disorders			
Ever before index date	9 (2.1)	8.9 (3.6-21.7)	5.9 (2.6-13.4)
12 mo before index date	7 (1.6)	23.0 (6.0-88.6)	13.8 (4.4-43.2)
6 mo before index date	6 (1.4)	59.1 (7.1-489.8)	29.5 (6.0-145.9)
Autism spectrum disorders			
Ever before index date	^a	6.6 (1.9-23.2)	39.4 (4.4-351.6)
12 mo before index date	^a	^b	^b
6 mo before index date	^a	^b	^b
Attention deficit disorder			
Ever before index date	20 (4.7)	9.4 (5.1-17.2)	14.1 (7.2-27.6)
12 mo before index date	8 (1.9)	15.8 (5.2-48.0)	15.8 (5.2-47.9)
6 mo before index date	6 (1.4)	19.7 (4.9-78.5)	59.1 (7.1-489.5)
Bipolar spectrum disorder			
Ever before index date	12 (2.8)	29.6 (9.6-91.2)	13.1 (5.6-31.0)
12 mo before index date	6 (1.4)	59.1 (7.1-489.8)	9.9 (3.2-30.4)
6 mo before index date	^a	39.4 (4.4-351.7)	19.7 (3.6-107.2)
Conduct/disruptive disorders			
Ever before index date	10 (2.3)	16.4 (6.0-45.0)	16.4 (6.0-44.9)
12 mo before index date	6 (1.4)	59.1 (7.1-489.8)	^b
6 mo before index date	5 (1.2)	49.3 (5.8-420.6)	^b
Depressive disorders			
Ever before index date	41 (9.6)	19.2 (11.5-32.2)	9.4 (6.2-14.2)
12 mo before index date	30 (7.0)	49.3 (20.6-117.7)	24.6 (12.7-47.7)
6 mo before index date	26 (6.1)	64.0 (22.5-182.6)	51.2 (19.8-132.6)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Eating disorders			
Ever before index date	^a	6.6 (1.1-39.2)	2.8 (0.6-13.5)
12 mo before index date	^a	9.9 (0.6-157.2)	3.3 (0.3-31.5)
6 mo before index date	^a	^b	3.3 (0.3-31.5)
Psychoses			
Ever before index date	8 (1.9)	26.3 (7.0-98.6)	11.3 (4.1-30.9)
12 mo before index date	6 (1.4)	19.7 (4.9-78.5)	14.8 (4.2-52.1)
6 mo before index date	5 (1.2)	49.3 (5.8-420.6)	49.2 (5.8-420.4)
Personality disorder			
Ever before index date	^a	39.4 (4.4-351.7)	19.7 (3.6-107.2)
12 mo before index date	^a	^b	^b
6 mo before index date	0	^b	^b
Self-inflicted injuries			
Ever before index date	^a	6.6 (1.1-39.2)	4.9 (0.9-26.8)
12 mo before index date	^a	^b	^b
6 mo before index date	^a	^b	^b
Substance abuse disorders			
Ever before index date	8 (1.9)	5.6 (2.4-13.3)	4.2 (1.8-9.4)
12 mo before index date	7 (1.6)	17.2 (5.1-58.7)	5.7 (2.3-14.5)
6 mo before index date	6 (1.4)	29.6 (6.0-146.0)	11.8 (3.6-38.6)
Suicidal ideation			
Ever before index date	9 (2.1)	14.8 (5.3-41.3)	5.5 (2.5-12.5)
12 mo before index date	7 (1.6)	34.5 (7.2-165.4)	9.9 (3.5-27.9)
6 mo before index date	7 (1.6)	^b	23.0 (6.0-88.5)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine.

^aFor fewer than 5 cases, numbers not reported.

^bNot calculated due to 0 cases among referents.

Table 15. Prevalence of Hospitalizations for Mental Health Conditions Among TM Children Ages 10 to 17 Years Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	99 (15.1)	10.2 (7.8-13.3)	7.8 (6.1-10.0)
12 mo before index date	79 (12.1)	24.3 (16.3-36.4)	16.6 (11.7-23.6)
6 mo before index date	59 (9.0)	32.3 (19.2-54.4)	20.1 (13.0-31.1)
Anxiety disorders			
Ever before index date	25 (3.8)	14.5 (7.9-26.7)	13.0 (7.2-23.4)
12 mo before index date	18 (2.8)	25.3 (10.6-60.4)	35.5 (13.2-95.3)
6 mo before index date	13 (2.0)	42.7 (12.2-149.3)	32.1 (10.5-98.0)
Autism spectrum disorders			
Ever before index date	5 (0.8)	4.9 (1.7-14.4)	8.2 (2.5-26.9)
12 mo before index date	^a	9.8 (2.5-39.3)	39.4 (4.4-352.4)
6 mo before index date	^a	3.3 (0.3-31.5)	^b
Attention deficit disorder			
Ever before index date	14 (2.1)	3.9 (2.1-7.3)	9.2 (4.5-19.0)
12 mo before index date	10 (1.5)	24.6 (7.7-78.3)	16.4 (6.0-45.1)
6 mo before index date	^a	^b	9.9 (2.0-48.8)
Bipolar spectrum disorder			
Ever before index date	18 (2.8)	9.8 (5.2-18.8)	8.9 (4.7-16.7)
12 mo before index date	13 (2.0)	16.0 (6.7-38.5)	21.4 (8.2-56.0)
6 mo before index date	8 (1.2)	15.8 (5.2-48.0)	19.7 (6.0-65.3)
Conduct/disruptive disorders			
Ever before index date	10 (1.5)	5.8 (2.7-12.6)	6.6 (3.0-14.6)
12 mo before index date	7 (1.1)	17.2 (5.1-58.7)	34.5 (7.2-165.8)
6 mo before index date	^a	39.4 (4.4-351.8)	39.4 (4.4-352.4)
Depressive disorders			
Ever before index date	83 (12.7)	17.8 (12.5-25.2)	9.1 (6.8-12.1)
12 mo before index date	63 (9.6)	47.7 (26.4-86.2)	19.4 (12.8-29.5)
6 mo before index date	49 (7.5)	96.5 (38.6-241.3)	20.1 (12.4-32.6)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Eating disorders			
Ever before index date	6 (0.9)	29.5 (6.0-146.0)	3.9 (1.5-10.1)
12 mo before index date	5 (0.8)	^b	12.3 (3.3-45.8)
6 mo before index date	^a	^b	9.9 (2.0-48.8)
Psychoses			
Ever before index date	10 (1.5)	20.0 (6.8-57.4)	12.3 (4.9-31.1)
12 mo before index date	8 (1.2)	19.7 (5.9-65.2)	13.2 (4.6-37.8)
6 mo before index date	^a	19.7 (3.6-107.3)	9.9 (2.5-39.3)
Personality disorder			
Ever before index date	8 (1.2)	26.3 (7.0-98.8)	8.8 (3.4-22.6)
12 mo before index date	7 (1.1)	68.9 (8.5-559.2)	34.5 (7.2-165.8)
6 mo before index date	7 (1.1)	^b	69.0 (8.5-560.2)
Self-inflicted injuries			
Ever before index date	13 (2.0)	64.0 (14.5-282.9)	12.8 (5.6-29.1)
12 mo before index date	9 (1.4)	^b	44.4 (9.6-204.9)
6 mo before index date	7 (1.1)	^b	34.5 (7.2-165.8)
12 mo before index date	13 (2.0)	8.0 (3.9-16.6)	9.9 (4.6-21.2)
6 mo before index date	9 (1.4)	11.1 (4.3-28.6)	11.1 (4.3-28.7)
Suicidal ideation			
Ever before index date	29 (4.4)	19.0 (10.3-35.3)	11.0 (6.5-18.6)
12 mo before index date	24 (3.7)	26.3 (12.3-56.2)	15.8 (8.3-29.9)
6 mo before index date	17 (2.6)	23.9 (10.0-57.4)	21.0 (9.1-48.4)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TM, transmasculine.

^aFor fewer than 5 cases, numbers not reported.

^bNot calculated due to 0 cases among referents.

As shown in Tables 16 and 17, mental health diagnoses were also significantly more common among adult TF and TM participants compared with the respective reference groups. As in the younger age groups, anxiety and depressive disorders were among the most prevalent diagnoses in both TF and TM participants. The PR estimates for all diagnostic categories among adult participants were significantly higher than the null value, but the differences were

somewhat less pronounced than those observed in the younger age group. The patterns of results were generally similar when the prevalence calculations were limited to inpatient encounters (Tables 18 and 19).

Tables 20 and 21 present results of sensitivity analyses limited to transgender participants who had no specific diagnostic codes and were identified exclusively via keywords. For children and adolescents, the prevalence estimates in these analyses were similar to those observed in the full study population. In contrast, for participants aged 18 and older, prevalence estimates were higher in the subset identified via keywords only. For example, the prevalence of depression ever before the index date among TM adults was 38% overall but 62% when limited to those with keywords only. When we estimated the data for adolescents separately for 10- to 13- and 14- to 17-year-olds, the results did not differ from those observed among all adolescents considered together.

Figure 7 depicts the correlation matrices across categories of mental health diagnoses for TM and TF children and adolescents. The panel with shaded squares and the panel with pie charts represent 2 different methods of graphically depicting the 2-way and higher-order correlations across categories of mental health diagnoses. Although none of the ϕ coefficients exceeded 0.5, we observed the strongest positive 2-way correlations between anxiety and depression among TF participants and between self-inflicted injuries and suicidal ideation among TM participants, as evidenced by the shaded squares with greatest intensity of color and corresponding circles with greatest amount of fill. The diagnostic categories that appear to cluster among TF children and adolescents were eating disorder, substance abuse, and self-inflicted injuries. Another discernible 3-way cluster in this group included conduct/disruptive disorder, attention deficit disorder, and bipolar disorders. We also observed the same 3-way cluster among the TM children and adolescents.

Table 16. Prevalence of Mental Health Conditions Among TF Adults (≥18 Years of Age) Relative to Referent Groups in the Kaiser Permanente STRONG Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	1181 (55.0)	2.1 (2.0-2.2)	1.6 (1.5-1.6)
12 mo before index date	956 (44.5)	4.3 (4.0-4.6)	2.9 (2.8-3.1)
6 mo before index date	906 (42.2)	6.0 (5.6-6.4)	4.0 (3.7-4.2)
Anxiety disorders			
Ever before index date	710 (33.1)	2.6 (2.5-2.8)	1.6 (1.5-1.7)
12 mo before index date	473 (22.0)	5.0 (4.5-5.5)	2.7 (2.5-3.0)
6 mo before index date	415 (19.3)	6.7 (6.0-7.5)	3.6 (3.3-4.0)
Autism spectrum disorders			
Ever before index date	20 (0.9)	1.8 (1.1-2.8)	6.8 (3.9-12.0)
12 mo before index date	13 (0.6)	3.1 (1.7-5.8)	12.8 (5.6-29.2)
6 mo before index date	13 (0.6)	4.6 (2.4-8.8)	18.3 (7.3-45.9)
Attention deficit disorder			
Ever before index date	146 (6.8)	1.3 (1.1-1.5)	2.6 (2.2-3.1)
12 mo before index date	79 (3.7)	2.3 (1.8-2.9)	3.3 (2.6-4.3)
6 mo before index date	73 (3.4)	3.1 (2.4-4.0)	4.3 (3.3-5.6)
Bipolar spectrum disorder			
Ever before index date	177 (8.2)	5.7 (4.8-6.9)	3.8 (3.2-4.4)
12 mo before index date	126 (5.9)	8.5 (6.7-10.7)	5.7 (4.6-7.0)
6 mo before index date	114 (5.3)	10.7 (8.3-13.9)	6.4 (5.1-8.1)
Depressive disorders			
Ever before index date	934 (43.5)	3.2 (3.1-3.4)	1.8 (1.7-1.9)
12 mo before index date	683 (31.8)	7.5 (6.8-8.2)	3.4 (3.2-3.7)
6 mo before index date	631 (29.4)	10.2 (9.2-11.3)	4.7 (4.3-5.1)
Eating disorders			
Ever before index date	89 (4.1)	11.7 (8.6-15.9)	2.0 (1.6-2.5)
12 mo before index date	41 (1.9)	25.3 (14.2-45.0)	4.2 (2.9-6.1)
6 mo before index date	34 (1.6)	47.9 (21.3-108.0)	5.3 (3.5-8.1)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Psychoses			
Ever before index date	64 (3.0)	3.6 (2.7-4.8)	4.2 (3.2-5.7)
12 mo before index date	28 (1.3)	4.5 (2.9-7.0)	7.9 (4.8-13.0)
6 mo before index date	22 (1.0)	4.9 (3.0-8.2)	11.4 (6.2-21.1)
Personality disorder			
Ever before index date	155 (7.2)	9.2 (7.4-11.3)	4.5 (3.7-5.4)
12 mo before index date	71 (3.3)	21.2 (14.1-32.0)	8.1 (5.9-11.0)
6 mo before index date	57 (2.7)	26.8 (16.3-44.1)	8.7 (6.1-12.3)
Self-inflicted injuries			
Ever before index date	70 (3.3)	5.5 (4.1-7.4)	3.4 (2.6-4.5)
12 mo before index date	30 (1.4)	12.9 (7.5-22.1)	9.3 (5.6-15.2)
6 mo before index date	24 (1.1)	19.7 (9.9-39.4)	15.8 (8.3-30.1)
Schizophrenia spectrum disorders			
Ever before index date	66 (3.1)	5.9 (4.3-7.9)	7.8 (5.6-10.7)
12 mo before index date	52 (2.4)	7.9 (5.5-11.3)	9.9 (6.7-14.5)
6 mo before index date	47 (2.2)	8.6 (5.8-12.7)	10.1 (6.7-15.1)
Substance abuse disorders			
Ever before index date	277 (12.9)	1.4 (1.2-1.6)	2.2 (1.9-2.4)
12 mo before index date	149 (6.9)	2.3 (1.9-2.7)	4.0 (3.3-4.8)
6 mo before index date	129 (6.0)	3.1 (2.6-3.8)	5.3 (4.3-6.5)
Suicidal ideation			
Ever before index date	82 (3.8)	9.8 (7.2-13.2)	6.6 (5.0-8.8)
12 mo before index date	48 (2.2)	13.2 (8.6-20.2)	9.5 (6.4-14.1)
6 mo before index date	37 (1.7)	19.2 (11.1-33.3)	12.6 (7.8-20.4)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine.

**Table 17. Prevalence of Mental Health Conditions Among TM Adults (≥18 Years of Age)
Relative to Referent Groups in the STRONG Kaiser Permanente Cohort**

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	1434 (49.7)	2.0 (1.9-2.0)	1.4 (1.3-1.4)
12 mo before index date	1108 (38.4)	3.8 (3.6-4.0)	2.4 (2.2-2.5)
6 mo before index date	1041 (36.0)	5.2 (4.8-5.5)	3.2 (3.0-3.4)
Anxiety disorders			
Ever before index date	797 (27.6)	2.2 (2.1-2.4)	1.3 (1.2-1.4)
12 mo before index date	507 (17.6)	4.2 (3.8-4.6)	2.1 (1.9-2.3)
6 mo before index date	450 (15.6)	5.7 (5.1-6.3)	2.8 (2.6-3.1)
Autism spectrum disorders			
Ever before index date	40 (1.4)	3.9 (2.7-5.6)	13.2 (8.2-21.2)
12 mo before index date	22 (0.8)	4.0 (2.5-6.6)	15.6 (8.0-30.4)
6 mo before index date	19 (0.7)	5.1 (2.9-8.8)	17.1 (8.2-35.9)
Attention deficit disorder			
Ever before index date	199 (6.9)	2.1 (1.8-2.5)	3.3 (2.8-3.8)
12 mo before index date	95 (3.3)	3.3 (2.6-4.2)	3.8 (3.0-4.9)
6 mo before index date	83 (2.9)	4.2 (3.3-5.5)	4.5 (3.5-5.8)
Bipolar spectrum disorder			
Ever before index date	138 (4.8)	3.7 (3.0-4.5)	2.4 (2.0-2.9)
12 mo before index date	88 (3.1)	5.0 (3.9-6.5)	3.4 (2.7-4.3)
6 mo before index date	80 (2.8)	6.0 (4.5-7.8)	3.7 (2.9-4.8)
Depressive disorders			
Ever before index date	1106 (38.3)	2.8 (2.7-3.0)	1.5 (1.4-1.6)
12 mo before index date	764 (26.5)	5.6 (5.2-6.1)	2.5 (2.4-2.7)
6 mo before index date	702 (24.3)	7.6 (7.0-8.3)	3.4 (3.1-3.6)
Eating disorders			
Ever before index date	55 (1.9)	5.7 (4.1-7.9)	1.3 (1.0-1.7)
12 mo before index date	30 (1.0)	16.5 (9.2-29.6)	2.6 (1.7-3.8)
6 mo before index date	27 (0.9)	29.7 (14.0-63.1)	3.5 (2.2-5.4)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Psychoses			
Ever before index date	106 (3.7)	4.5 (3.6-5.7)	4.9 (3.9-6.1)
12 mo before index date	56 (2.0)	6.8 (4.9-9.6)	10.5 (7.2-15.2)
6 mo before index date	52 (1.8)	10.7 (7.3-15.8)	19.1 (12.0-30.3)
Personality disorder			
Ever before index date	141 (4.9)	5.6 (4.6-6.9)	2.7 (2.3-3.3)
12 mo before index date	47 (1.6)	11.9 (7.8-18.2)	4.1 (2.9-5.8)
6 mo before index date	39 (1.4)	17.5 (10.4-29.5)	5.3 (3.6-7.8)
Self-inflicted injuries			
Ever before index date	44 (1.5)	3.2 (2.3-4.5)	1.9 (1.4-2.6)
12 mo before index date	14 (0.5)	6.0 (3.1-11.7)	4.5 (2.4-8.4)
6 mo before index date	12 (0.4)	9.1 (4.2-20.0)	6.3 (3.0-12.9)
Schizophrenia spectrum disorders			
Ever before index date	64 (2.2)	5.5 (4.0-7.4)	6.3 (4.6-8.6)
12 mo before index date	43 (1.5)	6.2 (4.2-9.0)	8.5 (5.7-12.8)
6 mo before index date	40 (1.4)	7.2 (4.8-10.8)	9.4 (6.1-14.5)
Substance abuse disorders			
Ever before index date	357 (12.4)	1.4 (1.3-1.6)	2.3 (2.1-2.6)
12 mo before index date	225 (7.8)	2.7 (2.4-3.1)	4.7 (4.0-5.5)
6 mo before index date	200 (6.9)	3.7 (3.2-4.3)	6.4 (5.4-7.6)
Suicidal ideation			
Ever before index date	67 (2.3)	6.9 (5.1-9.4)	5.4 (4.0-7.3)
12 mo before index date	49 (1.7)	11.8 (7.8-17.9)	10.6 (7.1-15.7)
6 mo before index date	42 (1.5)	16.0 (9.8-26.0)	16.6 (10.2-27.3)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TM, transmasculine.

Table 18. Prevalence of Hospitalization for Mental Health Conditions Among TF Adults (≥18 Years of Age) Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs Reference	vs Reference
All diagnoses of interest			
Ever before index date	252 (8.7)	2.4 (2.1-2.7)	1.7 (1.5-1.9)
12 mo before index date	103 (3.6)	3.9 (3.1-4.8)	2.9 (2.3-3.6)
6 mo before index date	88 (3.1)	5.4 (4.2-7.0)	4.2 (3.2-5.3)
Anxiety disorders			
Ever before index date	69 (2.4)	3.1 (2.3-4.0)	1.6 (1.2-2.1)
12 mo before index date	28 (1.0)	5.0 (3.2-7.9)	2.6 (1.7-3.9)
6 mo before index date	23 (0.8)	8.1 (4.7-14.1)	3.4 (2.1-5.4)
Autism spectrum disorders			
Ever before index date	^a	2.7 (0.8-9.7)	5.9 (1.4-24.9)
12 mo before index date	^a	9.9 (0.6-158.2)	^b
6 mo before index date	0	NC ^c	NC ^c
Attention deficit disorder			
Ever before index date	18 (0.6)	3.7 (2.2-6.4)	4.2 (2.4-7.2)
12 mo before index date	5 (0.2)	4.1 (1.5-11.7)	6.2 (2.0-18.9)
6 mo before index date	5 (0.2)	7.1 (2.2-22.3)	7.1 (2.3-22.3)
Bipolar spectrum disorder			
Ever before index date	45 (1.6)	3.7 (2.6-5.2)	2.7 (1.9-3.7)
12 mo before index date	18 (0.6)	4.3 (2.5-7.6)	5.8 (3.2-10.3)
6 mo before index date	17 (0.6)	6.2 (3.4-11.4)	10.5 (5.3-20.8)
Depressive disorders			
Ever before index date	174 (6.0)	3.8 (3.2-4.5)	1.8 (1.5-2.1)
12 mo before index date	66 (2.3)	5.4 (4.0-7.3)	3.1 (2.3-4.1)
6 mo before index date	52 (1.8)	7.1 (4.5-10.0)	4.1 (3.0-5.6)
Eating disorders			
Ever before index date	10 (0.4)	9.9 (4.1-23.8)	2.4 (1.2-4.8)
12 mo before index date	5 (0.2)	24.7 (4.8-127.5)	4.5 (1.6-13.0)
6 mo before index date	^a	19.8 (3.6-108.0)	6.6 (1.9-23.4)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs Reference	vs Reference
Psychoses			
Ever before index date	35 (1.2)	4.0 (2.7-5.9)	5.3 (3.5-8.0)
12 mo before index date	17 (0.6)	6.5 (3.5-11.9)	15.3 (7.2-32.6)
6 mo before index date	15 (0.5)	11.4 (5.4-24.0)	21.2 (8.7-52.0)
Personality disorder			
Ever before index date	29 (1.0)	6.4 (4.0-10.2)	3.9 (2.5-6.0)
Ever before index date	12 (0.4)	17.0 (6.7-43.1)	11.9 (5.1-27.5)
6 mo before index date	10 (0.4)	16.5 (6.0-45.4)	14.2 (5.4-37.1)
Self-inflicted injuries			
Ever before index date	16 (0.6)	4.4 (2.4-7.9)	2.0 (1.2-3.4)
12 mo before index date	^a	1.4 (0.2-11.5)	0.9 (0.1-7.0)
6 mo before index date	^a	2.5 (0.3-22.1)	2.0 (0.2-17.0)
Schizophrenia spectrum disorders			
Ever before index date	26 (0.9)	4.7 (2.9-7.5)	5.1 (3.2-8.1)
12 mo before index date	10 (0.4)	4.3 (2.1-9.0)	4.7 (2.2-10.0)
6 mo before index date	9 (0.3)	5.6 (2.5-12.6)	7.4 (3.1-17.6)
Substance abuse disorders			
Ever before index date	96 (3.3)	1.7 (1.4-2.1)	2.4 (1.9-3.0)
12 mo before index date	50 (1.7)	3.7 (2.7-5.1)	5.6 (4.0-7.9)
6 mo before index date	39 (1.4)	4.7 (3.2-6.8)	8.1 (5.3-12.3)
Suicidal ideation			
12 mo before index date	20 (0.7)	14.1 (7.2-28.0)	12.4 (6.4-23.9)
6 mo before index date	17 (0.6)	16.8 (7.7-36.7)	21.0 (9.1-48.7)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine.

^aFor fewer than 5 cases, numbers not reported.

^bNot calculated due to 0 cases among referents.

^cNot calculated due to 0 cases among transgender participants.

Table 19. Prevalence of Hospitalization for Mental Health Conditions Among TM Adults (≥18 Years of Age) Relative to Referent Groups in the STRONG Kaiser Permanente Cohort

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
Ever before index date	230 (10.7)	3.5 (3.0-4.0)	2.4 (2.1-2.7)
12 mo before index date	104 (4.8)	6.9 (5.4-8.8)	4.9 (3.9-6.2)
6 mo before index date	73 (3.4)	7.3 (5.4-9.8)	6.0 (4.5-8.0)
Anxiety disorders			
Ever before index date	59 (2.8)	4.9 (3.6-6.6)	2.2 (1.7-3.0)
6 mo before index date	12 (0.6)	5.2 (2.6-10.3)	2.9 (1.5-5.5)
Autism spectrum disorders			
Ever before index date	^a	3.3 (0.7-16.3)	2.8 (0.6-13.6)
12 mo before index date	0	NC ^b	NC ^b
6 mo before index date	0	NC ^b	NC ^b
Attention deficit disorder			
Ever before index date	13 (0.6)	2.0 (1.1-3.7)	6.4 (3.2-12.9)
12 mo before index date	6 (0.3)	5.9 (2.2-16.3)	11.9 (3.6-38.8)
6 mo before index date	5 (0.2)	8.2 (2.5-26.9)	24.7 (4.8-127.2)
Bipolar spectrum disorder			
Ever before index date	61 (2.8)	5.7 (4.2-7.8)	4.4 (3.3-6.0)
12 mo before index date	30 (1.4)	9.3 (5.6-15.2)	9.9 (6.0-16.4)
6 mo before index date	24 (1.1)	11.8 (6.6-21.4)	13.9 (7.5-25.9)
Depressive disorders			
Ever before index date	170 (7.9)	5.6 (4.7-6.8)	2.8 (2.4-3.3)
12 mo before index date	68 (3.2)	10.7 (7.6-15.0)	5.69 (4.24-7.64)
6 mo before index date	47 (2.2)	10.8 (7.2-16.3)	6.9 (4.8-10.0)
Eating disorders			
Ever before index date	18 (0.8)	22.2 (9.7-51.0)	4.2 (2.4-7.3)
12 mo before index date	7 (0.3)	^c	7.7 (2.9-20.6)
6 mo before index date	^a	^c	7.9 (2.1-29.4)

Categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Psychoses			
Ever before index date	22 (1.0)	2.9 (1.8-4.6)	4.7 (2.9-7.8)
12 mo before index date	7 (0.3)	4.3 (1.8-10.5)	7.7 (2.9-20.6)
6 mo before index date	^a	2.3 (0.7-8.0)	5.9 (1.4-24.8)
Personality disorder			
Ever before index date	46 (2.1)	16.8 (10.5-27.0)	6.6 (4.6-9.5)
12 mo before index date	17 (0.8)	41.9 (14.1-124.5)	14.0 (6.7-29.3)
6 mo before index date	11 (0.5)	27.1 (8.7-85.1)	27.2 (8.7-85.2)
Self-inflicted injuries			
Ever before index date	20 (0.9)	6.8 (3.9-12.0)	3.2 (2.0-5.4)
12 mo before index date	6 (0.3)	19.7 (4.9-78.8)	9.9 (3.2-30.6)
6 mo before index dates	6 (0.3)	29.6 (6.0-146.5)	29.6 (6.0-146.7)
Schizophrenia spectrum disorder			
Ever before index date	16 (0.7)	3.1 (1.8-5.4)	3.8 (2.1-6.7)
12 mo before index date	11 (0.5)	6.4 (3.0-13.6)	5.7 (2.7-12.0)
6 mo before index date	8 (0.4)	5.6 (2.4-13.4)	7.2 (2.9-17.8)
Substance abuse disorders			
Ever before index date	82 (3.8)	2.2 (1.8-2.8)	2.5 (2.0-3.2)
12 mo before index date	37 (1.7)	4.6 (3.1-6.7)	6.3 (4.2-9.5)
6 mo before index date	26 (1.2)	4.8 (3.0-7.7)	8.6 (5.1-14.4)
Suicidal ideation			
Ever before index date	38 (1.8)	9.6 (6.2-15.0)	7.7 (5.0-11.7)
12 mo before index date	24 (1.1)	16.9 (8.8-32.6)	12.5 (6.8-22.7)
6 mo before index date	16 (0.7)	26.3 (10.3-67.2)	13.2 (6.2-27.8)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TM, transmasculine.

^aFor fewer than 5 cases, numbers were not reported.

^bNot calculated due to 0 cases among transgender participants.

^cNot calculated due to 0 cases among referents.

Table 20. Prevalence of Most Common Mental Health Conditions Among TF With Keyword Evidence Only Relative to Referent Groups in the STRONG Kaiser Permanente Cohort by Age Group

Age group and categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
3-9 y old			
All diagnoses of interest			
Ever before index date	35 (31.0)	3.0 (2.1-4.1)	5.5 (3.8-7.9) 6
months before index date	34 (30.1)	6.0 (4.1-8.7)	14.7 (9.0-24.0)
Anxiety disorders			
Ever before index date	14 (12.4)	4.8 (2.6-8.8)	6.6 (3.5-12.6)
6 mo before index date	11 (9.7)	20.1 (6.6-67.5)	23.9 (7.5-89.5)
Attention deficit disorder			
Ever before index date	19 (16.8)	3.9 (2.4-6.3)	7.0 (4.0-12.1)
6 mo before index date	18 (15.9)	5.6 (3.3-9.7)	13.7 (6.9-27.3)
10-13 y old			
All diagnoses of interest			
Ever before index date	62 (75.6)	4.2 (3.4-5.0)	6.2 (4.9-7.7)
6 mo before index date	53 (64.6)	8.5 (6.4-11.3)	14.5 (10.1-20.7)
Anxiety disorders			
Ever before index date	25 (30.5)	6.1 (3.9-9.4)	5.9 (3.8-9.1)
6 mo before index date	16 (19.5)	14.4 (6.9-30.1)	19.7 (8.7-44.6)
Depressive disorders			
Ever before index date	34 (41.5)	8.9 (5.9-13.3)	9.3 (6.2-14.0)
6 mo before index date	29 (35.4)	28.8 (14.6-56.9)	20.4 (11.2-37.0)
14-17 y old			
All diagnoses of interest			
Ever before index date	104 (78.8)	3.4 (3.0-3.9)	3.9 (3.4-4.5)
6 mo before index date	93 (70.5)	10.7 (8.5-13.6)	12.7 (9.9-16.3)
Anxiety disorders			
Ever before index date	52 (39.4)	5.3 (4.0-7.0)	4.1 (3.1-5.4)
6 mo before index date	38 (28.8)	24.9 (14.1-44.0)	15.0 (9.3-24.0)

Age group and categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Depressive disorders			
Ever before index date	76 (57.6)	6.5 (5.2-8.2)	5.3 (4.3-6.6)
6 mo before index date	67 (50.8)	34.6 (21.5-55.7)	15.3 (10.9-21.5)
≥18 y old			
All diagnoses of interest			
Ever before index date	446 (69.4)	2.6 (2.5-2.8)	1.9 (1.8-2.0)
6 mo before index date	369 (57.4)	7.9 (7.1-8.8)	4.7 (4.3-5.1)
Anxiety disorders			
Ever before index date	296 (46.0)	3.6 (3.2-4.0)	2.1 (1.9-2.3)
6 mo before index date	191 (29.7)	10.0 (8.3-12.0)	5.4 (4.6-6.3)
Depressive disorders			
Ever before index date	248 (47.4)	16.1 (13.5-19.3)	7.3 (6.4-8.4)
6 mo before index date	234 (36.4)	10.6 (9.0-12.6)	4.6 (4.0-5.3)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine.

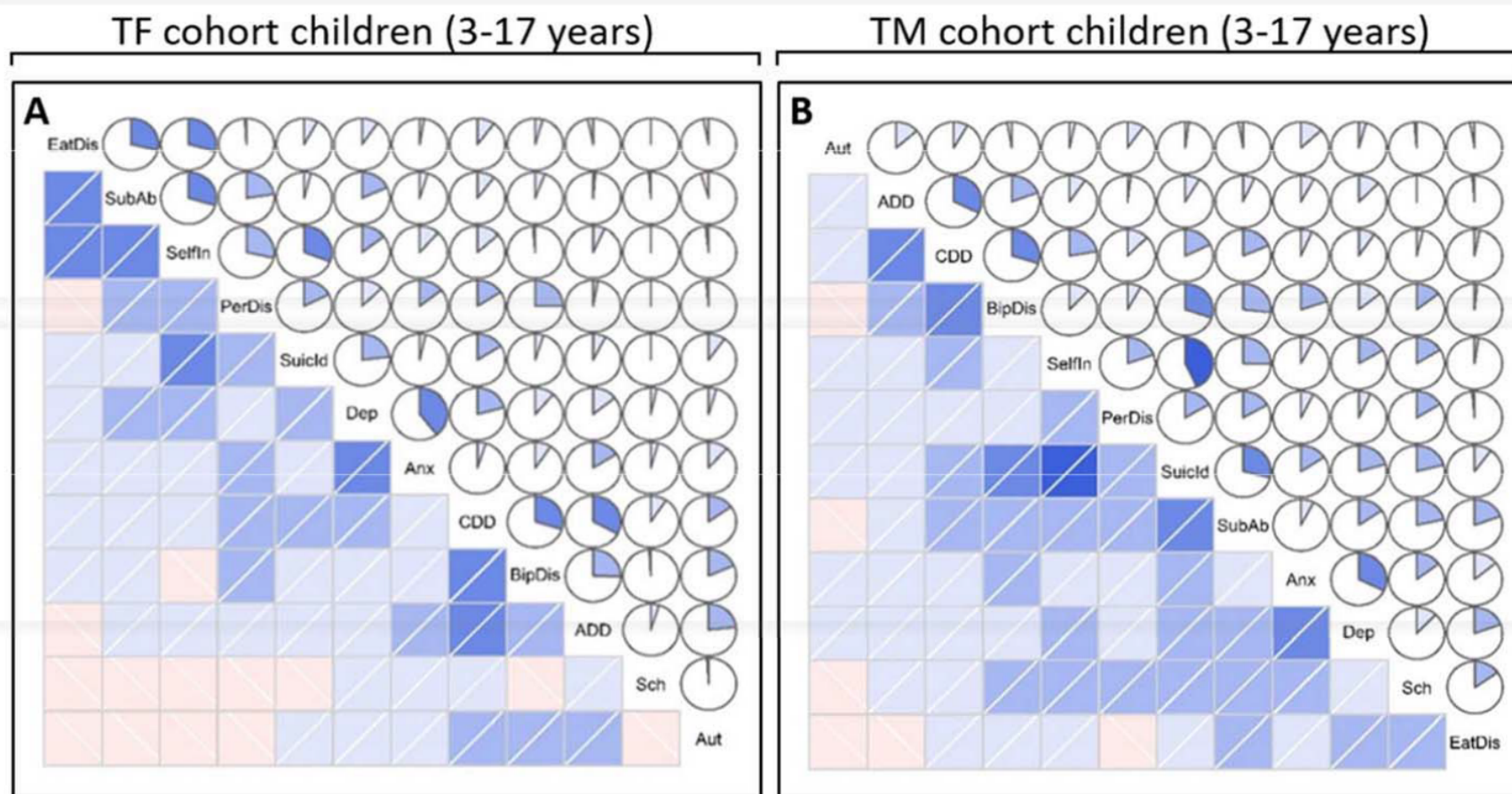
Table 21. Prevalence of Most Common Mental Health Conditions Among TF With Keyword Evidence Only Relative to Referent Groups in the STRONG Kaiser Permanente Cohort by Age Group

Age group and categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
All diagnoses of interest			
3-9 y old			
Ever before index date	25 (41.0)	4.1 (2.8-6.0)	5.9 (3.8-8.9)
6 mo before index date	23 (37.7)	7.3 (4.6-11.8)	12.6 (7.2-22.0)
Anxiety disorders			
Ever before index date	11 (18.0)	7.3 (3.5-15.1)	5.7 (2.8-11.4)
6 mo before index date	7 (11.5)	11.6 (4.0-33.3)	9.8 (3.6-27.1)
Attention deficit disorder			
Ever before index date	12 (19.7)	3.6 (2.0-6.6)	9.1 (4.3-19.0)
6 mo before index date	12 (19.7)	5.2 (2.7-9.9)	16.9 (6.9-41.2)
10-13 y old			
All diagnoses of interest			
Ever before index date	46 (70.8)	3.3 (2.6-4.1)	5.2 (4.1-6.7)
6 mo before index date	43 (66.2)	8.5 (6.2-11.7)	12.9 (8.8-18.7)
Anxiety disorders			
Ever before index date	16 (24.6)	3.7 (2.2-6.2)	3.2 (1.9-5.2)
6 mo before index date	13 (20.0)	11.7 (5.5-25.0)	10.7 (5.1-22.5)
Depressive disorders			
Ever before index date	34 (52.3)	10.2 (6.8-15.3)	9.6 (6.5-14.3)
6 mo before index date	29 (44.6)	28.7 (14.7-56.2)	23.9 (12.8-44.5)
14-17 y old			
All diagnoses of interest			
Ever before index date	177 (79.0)	3.1 (2.8-3.5)	3.7 (3.3-4.1)
6 mo before index date	162 (72.3)	8.4 (7.2-9.8)	9.2 (7.8-10.9)

Age group and categories of mental health disorders	No. (%)	Prevalence ratio (95% CI)	
		vs reference males	vs reference females
Anxiety disorders			
Ever before index date	91 (40.6)	4.8 (3.9-5.9)	3.9 (3.2-4.8)
6 mo before index date	60 (26.8)	15.1 (10.4-22.1)	8.0 (5.8-10.9)
Ever before index date	157 (70.1)	7.4 (6.3-8.6)	6.1 (5.3-7.0)
6 mo before index date	133 (59.4)	25.2 (18.8-33.6)	16.4 (12.9-20.8)
≥18 y old			
All diagnoses of interest			
Ever before index date	404 (77.3)	3.0 (2.8-3.2)	2.3 (2.1-2.4)
6 mo before index date	353 (67.5)	10.4 (9.2-11.7)	6.5 (5.9-7.2)
Anxiety disorders			
Ever before index date	258 (49.3)	4.1 (3.7-4.6)	2.4 (2.2-2.7)
6 mo before index date	161 (30.8)	11.7 (9.5-14.4)	6.3 (5.3-7.5)
Depressive disorders			
Ever before index date	325 (62.1)	4.7 (4.3-5.2)	2.6 (2.4-2.9)
6 mo before index date	248 (47.4)	16.1 (13.5-19.3)	7.3 (6.4-8.4)

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine.

Figure 7. Corrgram Correlation Matrices of Mental Health Conditions Before the Index Date in TF (A) and TM (B) Children, Aged 3-17 Years



Abbreviations: ADD, attention deficit disorder; Anx, anxiety disorders; Aut, autism spectrum disorders; BipDis, bipolar spectrum disorder; CDD, conduct/disruptive disorders; Dep, depressive disorders; EatDis, eating disorders; PerDis, personality disorder; Sch, schizophrenia spectrum disorders; SelfIn, self-inflicted injuries; SubAb, substance abuse disorders; Suicld, suicidal ideation; TF, transfeminine; TM, transmasculine.

The corresponding analyses for both TM and TF adults demonstrated the strongest 2-way correlations between schizophrenia spectrum disorders and psychoses, and between anxiety and depression. There were few discernable higher-order clusters among adults in either group (Figure 8).

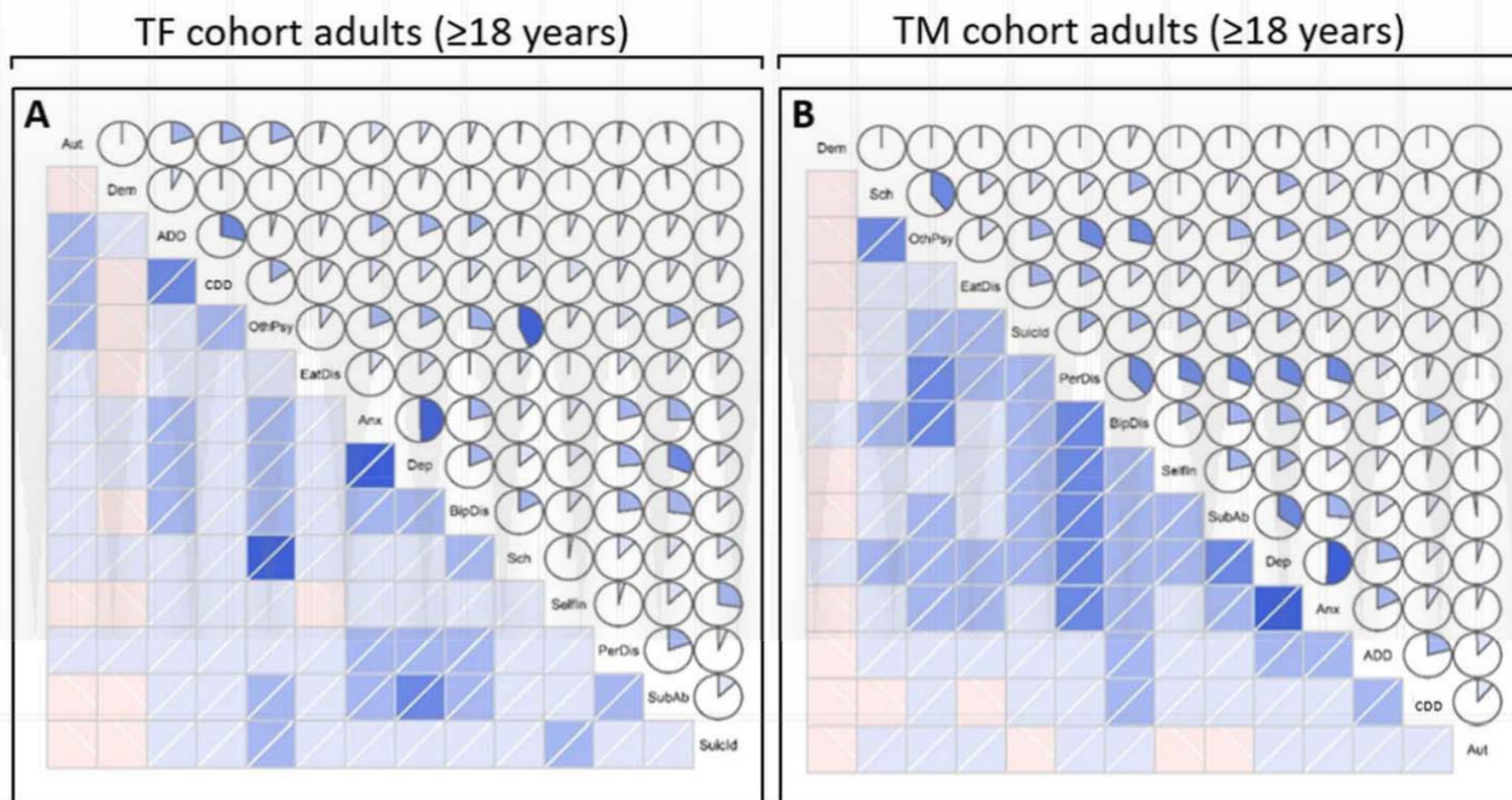
Gender Affirmation and Self-Reported Outcomes in the Kaiser Permanente Survey

Of the 2136 persons invited to participate, 697 participants (33%) filled out the survey; of those, 347 were TM and 350 were TF. As shown in Table 22, TM participants were younger on average than their TF counterparts (73% vs 35% under the age of 40 years). As expected, only a small minority of TF participants (7%) presented as men, and the proportion of TM participants who presented as women was only 1.4%. More than half of survey respondents (55% of TM and 57% of TF) were non-Hispanic Whites. The proportion of Hispanics (19%) was similar to that reported in the overall STRONG cohort, but the proportions of Blacks and Asians were lower (3% and 7%, respectively) than in the EMR-based study (see the “Kaiser Permanente EMR Cohort Description” section).

Figures 9 and 10 present self-reported current and desired gender identity and expression scores among survey respondents. Among TF participants, 67% and 43% reported being close to the highest possible (80%-100%) score on female identity and feminine expression scales, respectively. The equivalent proportions for male identity and masculine expression scales among TM participants were 69% and 49%, respectively. A desire to be in the 80% to 100% range on the corresponding gender identity and expression scales was expressed by 91% and 74%, respectively, of TF and by 79% and 61%, respectively, of TM participants.

Only 45% of TF participants felt that others would place them in the highest category of female gender identity and 35% felt that others would place them in the highest category of the feminine expression scale. Among TM participants, the corresponding proportions for male gender identity and masculine expression were 69% and 48%, respectively (Figure 11). A wish to be seen in the highest category of the corresponding gender identity and expression scales was reported by 91% and 74%, respectively, of TF, and by 84% and 62%, respectively, of TM participants (Figure 12).

Figure 8. Corrgram Correlation Matrices of Mental Health Conditions Before the Index Date in TF (A) and TM (B) Adults (Aged ≥ 18)



Abbreviations: ADD, attention deficit disorder; Anx, anxiety disorders; Aut, autism spectrum disorders; BipDis, bipolar spectrum disorder; CDD, conduct/disruptive disorders; Dem, dementia; Dep, depressive disorders; EatDis, eating disorders; OthPsy, other psychoses; PerDis, personality disorder; Sch, schizophrenia spectrum disorders; SelfIn, self-inflicted injuries; SubAb, substance abuse disorders; Suicid, suicidal ideation; TF, transfeminine; TM, transmasculine.

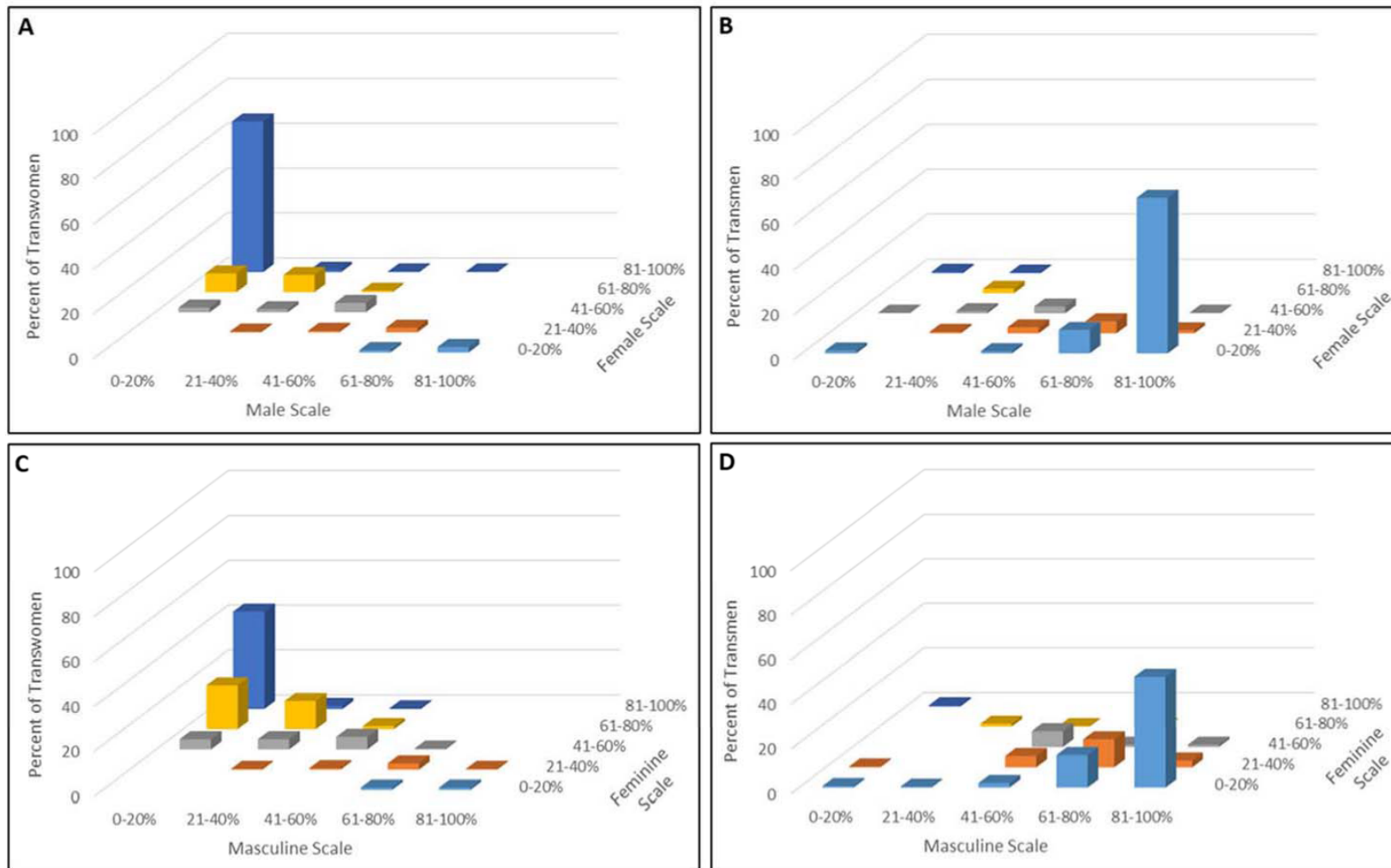
Table 22. Characteristics of the STRONG Survey Participants

Participant characteristics	All participants, n (Col %)	TM, n (Col %)	TF, n (Col %)
Age, y			
Under 30	217 (31.1)	148 (42.7)	69 (19.7)
30-39	157 (22.5)	105 (30.3)	52 (14.9)
40-54	168 (24.1)	69 (19.9)	99 (28.3)
55 or older	155 (22.2)	25 (7.2)	130 (37.1)
Presents as a woman			
Never	330 (47.3)	310 (89.3)	20 (5.7)
Part time	67 (9.6)	22 (6.3)	45 (12.9)
Full time	273 (39.2)	5 (1.4)	268 (76.6)
Declined to respond	27 (3.9)	10 (2.9)	17 (4.9)
Presents as a man			
Never	277 (39.7)	16 (4.6)	261 (74.6)
Part time	63 (9.0)	22 (6.3)	41 (11.7)
Full time	323 (46.3)	297 (85.6)	26 (7.4)
Declined to respond	34 (4.9)	12 (3.5)	22 (6.3)
Race/ethnicity			
Non-Hispanic White	392 (56.2)	191 (55.0)	201 (57.4)
Non-Hispanic Black	20 (2.9)	13 (3.7)	7 (2.0)
Asian/Pacific islander	48 (6.9)	25 (7.2)	23 (6.6)
Hispanic	133 (19.1)	68 (19.6)	65 (18.6)
Mixed race/ethnicity	18 (2.6)	8 (2.3)	10 (2.9)
Other race/ethnicity	49 (7.0)	27 (7.8)	22 (6.3)
Declined to respond	37 (5.3)	15 (4.3)	22 (6.3)
Education			
High school graduate or less	74 (10.6)	45 (13.0)	29 (8.3)
At least some college	242 (34.7)	100 (28.8)	142 (40.6)
College graduate	197 (28.3)	104 (30.0)	93 (26.6)
Graduate/professional school	150 (21.5)	81 (23.3)	69 (19.7)
Declined to respond	34 (4.9)	17 (4.9)	17 (4.9)

Participant characteristics	All participants, n (Col %)	TM, n (Col %)	TF, n (Col %)
Income			
Less than \$25 000	127 (18.2)	69 (19.9)	58 (16.6)
\$25 000-\$49 999	138 (19.8)	65 (18.7)	73 (20.9)
\$50 000-\$74 999	120 (17.2)	65 (18.7)	55 (15.7)
\$75 000-\$99 999	93 (13.3)	47 (13.5)	46 (13.1)
Greater than \$100 000	128 (18.4)	51 (14.7)	77 (22.0)
Prefer not to answer or unsure	91 (13.1)	50 (14.4)	41 (11.7)
Total, n (row %)	697 (100.0)	347 (50.0)	9 (50.0)

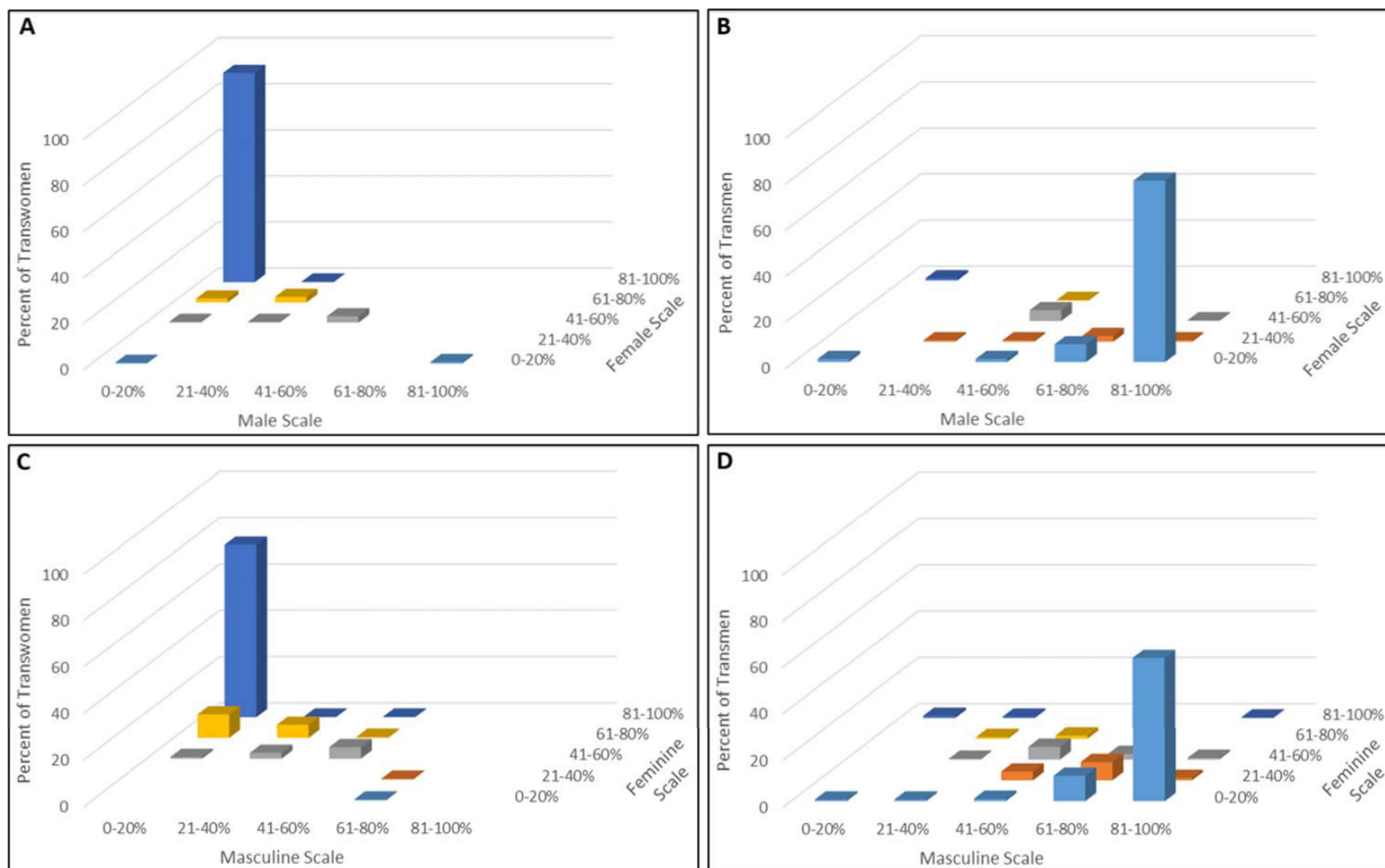
Abbreviations: Col, column; STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; TM, transmasculine.

Figure 9. Extent to Which Survey Respondents Perceived Themselves as Male/Female (A, B) and Masculine/Feminine (C, D) Among TF (A, C) and TM (B, C) Individuals (Assuming Gender and Gender Expression Represent a Continuum, Where Would You Place Yourself on the Scales Below at the Present Time?)



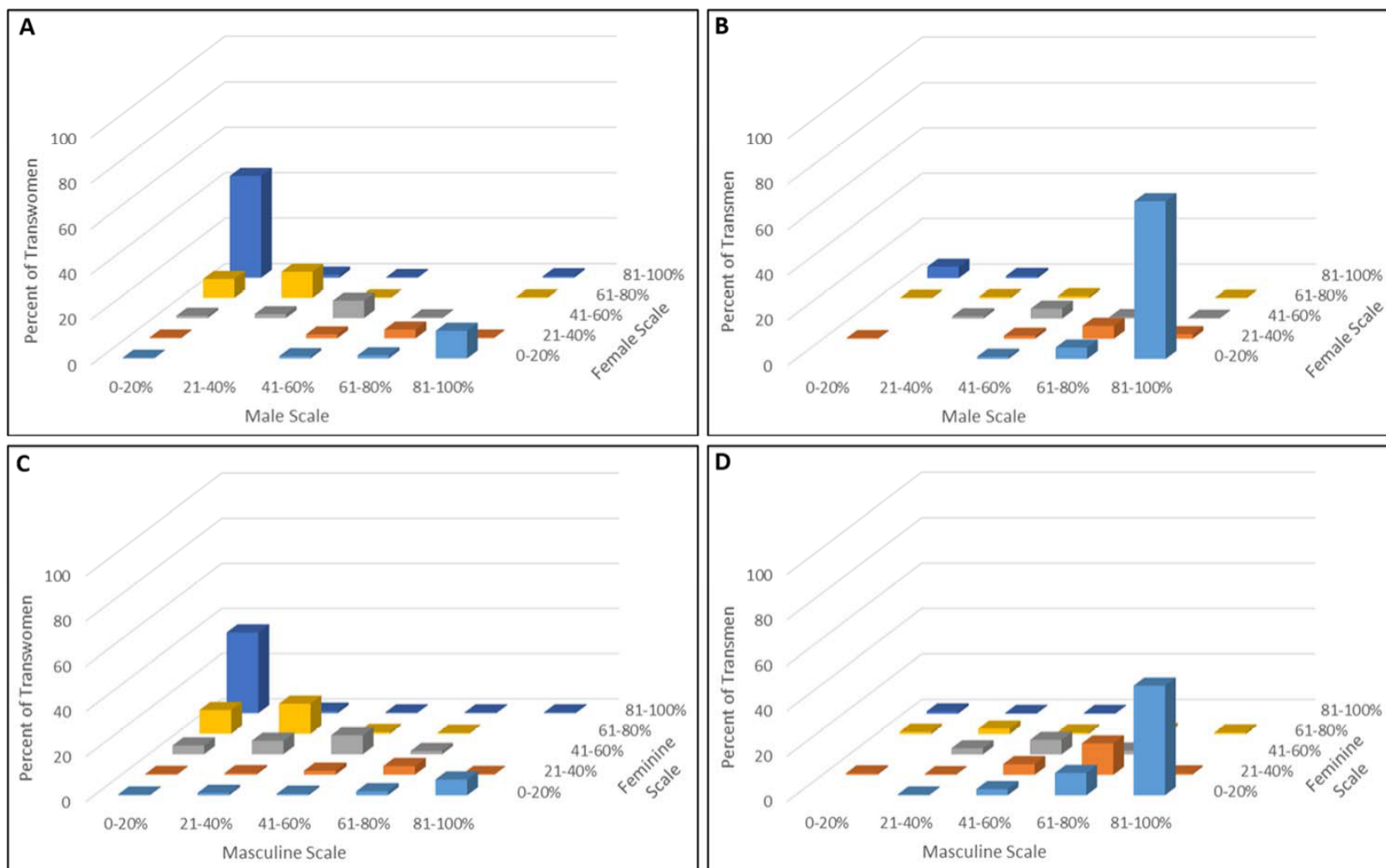
Abbreviations: TF, transfeminine; TM, transmasculine.

Figure 10. Extent to Which Survey Respondents Want to Be Male/Female (A, B) and Masculine/Feminine (C, D) Among TF (A, C) and TM (B, D) Individuals (Assuming Gender and Gender Expression Represent a Continuum, Where Do You Want to Be on the Scales Below?)



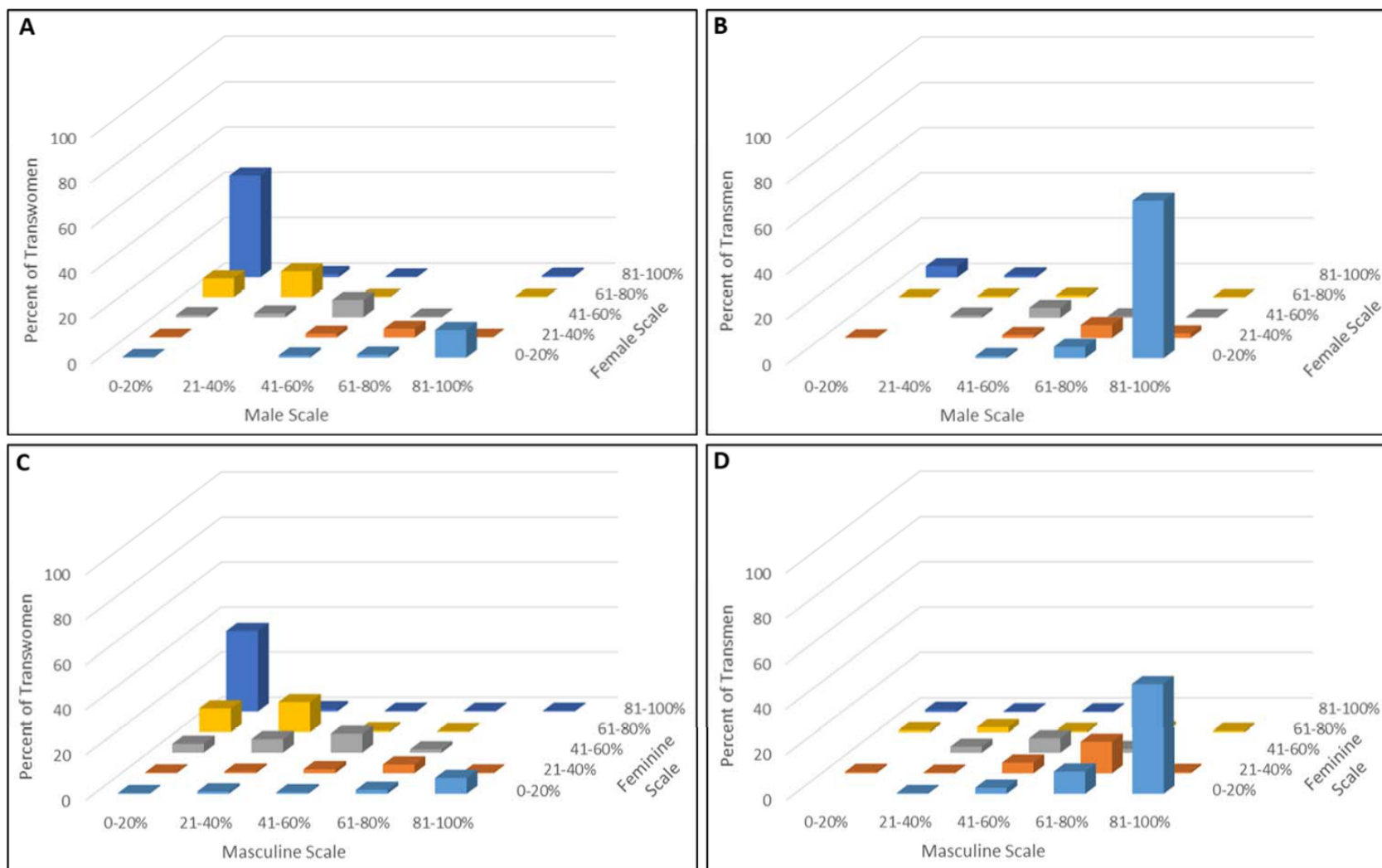
Abbreviations: TF, transfeminine; TM, transmasculine.

Figure 11. Extent to Which Survey Respondents Believe Others Perceive Them as a Male/Female (A, B) and Masculine/Feminine (C, D) Among TF (A, C) and TM (B, D) Individuals (Assuming Gender and Gender Expression Represent a Continuum, How Do You Think Others Perceive You on the Scales Below?)



Abbreviations: TF, transfeminine; TM, transmasculine.

Figure 12. Extent to Which Survey Respondents Want to Be Perceived by Others as Male/Female (A, B) and Masculine/Feminine (C, D) Among TF (A, C) and TM (B, D) Individuals (Assuming Gender and Gender Expression Represent a Continuum, How Do You Want Others to Perceive You on the Scales Below?)



Abbreviations: TF, transfeminine; TM, transmasculine.

Tables 23 to 25 compare the distributions of the 3 dependent variables of interest: total TCS score, body image score, and passing status by TM/TF status and by gender affirmation category. As the extent of gender affirmation increased, the TCS score also increased with no appreciable difference between TM and TF participants (Table 23). The results were generally similar in the analyses that examined distributions of the body image score (Table 24). The distributions of the passing status score also showed a pattern of a more favorable (decreasing) difference between the desired and the current scores, with increasing extent of gender affirmation; however, unlike the previous 2 analyses, there was clear evidence that TM individuals reported a higher passing status than their TF counterparts (Table 25).

We confirmed the above results in the multivariable logistic regression analyses. There was no evidence of significant interaction between gender identity and gender affirmation therapy, and for this reason all models include TM/TF status as a covariate. The association of gender affirmation with the outcomes of interest was evident in all models, but particularly pronounced for the TCS score. The proportion of participants with a low (below median) TCS score was nearly 4 times higher in the “no reported treatment” category compared with the “definitive bottom” surgery group (Table 26). The overall patterns were similar, but the PR estimates were of lower magnitude in the regression models that used body image and passing status as the outcomes of interest (Tables 27 and 28). Unlike the results for TCS and body image, the analyses for “passing status” demonstrated a pronounced difference by gender identity. Using TF participants as reference, the TM individuals were half as likely (PR, 0.55; 95% CI, 0.45-0.67) to report that their desired score was higher than their current score. The results of the weighted models correcting for nonresponse were generally similar to those of the main analyses (Tables 26-28). We observed the most attenuated result in the analyses of the association between passing status and gender affirmation. On the other hand, the difference in the passing status between TM and TF respondents remained unchanged.

Table 23. The Distributions of the Total Transgender Congruence Score,^a by TM/TF Status and by Gender Affirmation Category

Gender affirmation category	TM			TF		
	Median	IQR	<i>P</i> value ^b	Median	IQR	<i>P</i> value ^b
No treatment	30	22-36	<.0001	30	25-46	<.0001
Hormones only	43	32-51		44	33-50	
Top surgery	50	44-56		44	39-52	
Partial bottom surgery	49	42-55		51	37-57	
Definitive bottom surgery	55	49-59		53	48-57	

Abbreviations: IQR, interquartile range; TF, transfeminine; TM, transmasculine.

^aComposite of 12 questions; possible range, 12 to 60.

^bKruskal-Wallis test.

Table 24. The Distributions of the Total Body Image Score,^a by TM/TF Status and by Gender Affirmation Category

Gender affirmation category	TM			TF		
	Median	IQR	<i>P</i> value ^b	Median	IQR	<i>P</i> value ^b
No treatment	9	9-16	<.0001	11	6-18	.0065
Hormones only	12	7-18		15	10-20	
Top surgery	17	12-22		12	9-19	
Partial bottom surgery	15	9-18		14	10-22	
Definitive bottom surgery	16	13-21		18	13-22	

Abbreviations: IQR, interquartile range; TF, transfeminine; TM, transmasculine.

^aComposite of 5 questions; possible range, 5 to 25.

^bKruskal-Wallis test.

Table 25. The Distributions of the “Passing” Score,^a by TM/TF Status and by Gender Affirmation Category

Gender affirmation category	TM			TF		
	Median	IQR	<i>P</i> value ^b	Median	IQR	<i>P</i> value ^b
No treatment	25	0-51	.0021	31	1-65	.0007
Hormones only	5	0-30		20	1-51	
Top surgery	0	0-10		15	2-30	
Partial bottom surgery	0	0-2		15	5-29	
Definitive bottom surgery	0	0-0		6	0-20	

Abbreviations: IQR, interquartile range; TF, transfeminine; TM, transmasculine.

^aDifference between the extent to which the participants wanted others to perceive them as a person of desired gender (desired score; range, 0% to 100%) and the extent to which they thought others perceived them (current score; range, 0% to 100%)

^bKruskal-Wallis test.

Table 26. Associations of Gender Affirmation, Gender Identity, and Procedures Aimed at Changing Secondary Sex Characteristics With Low (Below Median) Total Transgender Congruence Score^a

Variables of interest	Total no.	No. with outcome (%)	Unweighted analysis			Weighted analysis		
			PR ^b	95% CI		PR ^b	95% CI	
Gender affirmation category								
Definitive bottom surgery	149	33 (22)	1.00			(Reference)		
Partial bottom surgery	77	34 (44)	2.11	1.38	3.23	2.15	1.37	3.37
Top surgery	161	71 (44)	2.06	1.39	3.05	2.10	1.39	3.17
Hormones only	210	138 (66)	3.03	2.14	4.30	3.22	2.25	4.61
No treatment	27	23 (85)	3.96	2.72	5.75	3.66	2.28	5.88
Gender identity								
TF	306	150 (49)	1.00	(Reference)		1.00	(Reference)	
TM	318	149 (47)	0.95	0.77	1.15	1.03	0.83	1.28

Variables of interest	Total no.	No. with outcome (%)	Unweighted analysis			Weighted analysis		
			PR ^b	95% CI		PR ^b	95% CI	
Changes in secondary sex characteristics	75	30 (40)	1.00	(Reference)		1.00	(Reference)	
No	549	269 (49)	0.88	0.68	1.12	0.87	0.68	1.13

Abbreviations: PR, prevalence ratio; TF, transfeminine; TM, transmasculine.

^aModel based on 624 observations.

^bAdjusted for age, race, site, and all variables in the table.

Table 27. Associations of Gender Affirmation, Gender Identity, and Procedures Aimed at Changing Secondary Sex Characteristics With Low (Below Median) Body Image Score^a

Variables of interest	Total No.	No. with outcome (%)	Unweighted analysis			Weighted analysis		
			PR ^b	95% CI		PR ^b	95% CI	
Gender affirmation category								
Definitive bottom surgery	150	49 (33)	1.00	(Reference)			(Reference)	
Partial bottom surgery	79	39 (49)	1.42	1.01	2.01	1.58	1.1	2.26
Top surgery	167	67 (40)	1.19	0.85	1.65	1.25	0.88	1.78
Hormones only	220	116 (53)	1.59	1.20	2.10	1.72	1.27	2.32
No treatment	28	17 (61)	1.81	1.22	2.68	1.75	1.08	2.83
Gender identity						1.58	1.1	2.26
TF	319	139 (44)	1.00	(Reference)			(Reference)	
TM	325	149 (46)	1.09	0.88	1.36	1.11	0.88	1.39
Changes in secondary sex characteristics								
Yes	77	24 (31)	1.00	(Reference)			(Reference)	
No	567	264 (47)	1.24	0.87	1.76	1.29	0.87	1.90

Abbreviations: PR, prevalence ratio; TF, transfeminine; TM, transmasculine.

^aModel based on 644 observations.

^bAdjusted for age, race, site, and all variables in the table.

Table 28. Associations of Gender Affirmation, Gender Identity, and Procedures Aimed at Changing Secondary Sex Characteristics With a Difference Between the Desired and the Current Passing Status^a

Variables of interest	Total No.	No. with outcome (%)	Unweighted analysis			Weighted analysis		
			PR ^b	95% CI		PR ^b	95% CI	
Gender affirmation category								
Definitive bottom surgery	148	77 (52%)	1.00	(Reference)			(Reference)	
Partial bottom surgery	75	31 (41%)	1.19	0.91	1.56	1.14	0.86	1.51
Top surgery	161	67 (42%)	1.23	0.98	1.55	1.17	0.91	1.51
Hormones only	216	148 (69%)	1.44	1.16	1.79	1.39	1.12	1.73
No treatment	21	16 (76%)	1.63	1.15	2.32	1.33	0.77	2.28
Gender identity						1.14	0.86	1.51
TF	309	222 (72%)	1.00	(Reference)			(Reference)	
TM	312	117 (38%)	0.55	0.45	0.67	0.59	0.48	0.74
Changes in secondary sex characteristics								
Yes	74	49 (66%)	1.00	(Reference)			(Reference)	
No	547	290 (53%)	0.98	0.77	1.24	0.95	0.75	1.19

Abbreviations: PR, prevalence ratio; TF, transfeminine; TM, transmasculine.

^aModel based on 621 observations.

^bAdjusted for age, race, site, and all variables in the table.

When we compared self-reported receipt of hormone therapy and gender-affirming surgery with the information derived from the EMR, the agreement between the 2 sources was 96% for hormone therapy and 72% for surgery. Assuming the survey responses are more complete, the sensitivity and specificity of the EMR-derived hormone therapy ascertainment were 97% and 89%, respectively. The corresponding sensitivity and specificity estimates for surgery were 61% and 92%, respectively. In order to estimate the effect of hormone misclassification on the association for VTE in TF compared with reference males (as reported in the “Rates of Acute Cardiovascular Events Rates in Relation to Hormone Use in the Kaiser Permanente Cohort” section), we applied the false-positive and false-negative rates to the 2 strata of TF (never and ever hormone use). We assumed nondifferential misclassification of hormone use with respect to VTE status. There was no change in the magnitude of association. The risk ratio comparing TF with no evidence of hormone therapy against reference males changed from 1.6 to 1.7 after adjustment for misclassification, while the risk ratio for TF with ever hormone use remained unchanged (RR, 1.5) after adjustment.

Mortality and Cancer Incidence Among Transgender Veterans

Although the VA EMR search identified a total of 7066 veterans with transgender-specific diagnoses, the available data allowed assigning TF/TM status to 5072 individuals. Of those, 4394 (87%) were TF, and 678 (13%) were TM (Table 29). As in the Kaiser Permanente cohort, TM participants were younger on average than their TF counterparts (57% vs 12% under the age of 36). The magnitude of this difference is likely explained by the method of gender ascertainment, which depended heavily on prostate-specific antigen (PSA) testing as evidence of TF status. The index dates for most (59%) TM participants were in recent years (2014-2017); by contrast the index dates among TF cohort members were more evenly distributed across the entire study period (2000-2017).

As shown in Figure 13, the all-cause mortality of TF veterans was lower than all-cause mortality of male referents, but higher than that in the female reference cohort, with HR (95% CI) estimates of 0.8 (0.7-0.9) and 1.3 (1.2-1.5), respectively. The same analyses for TM veterans

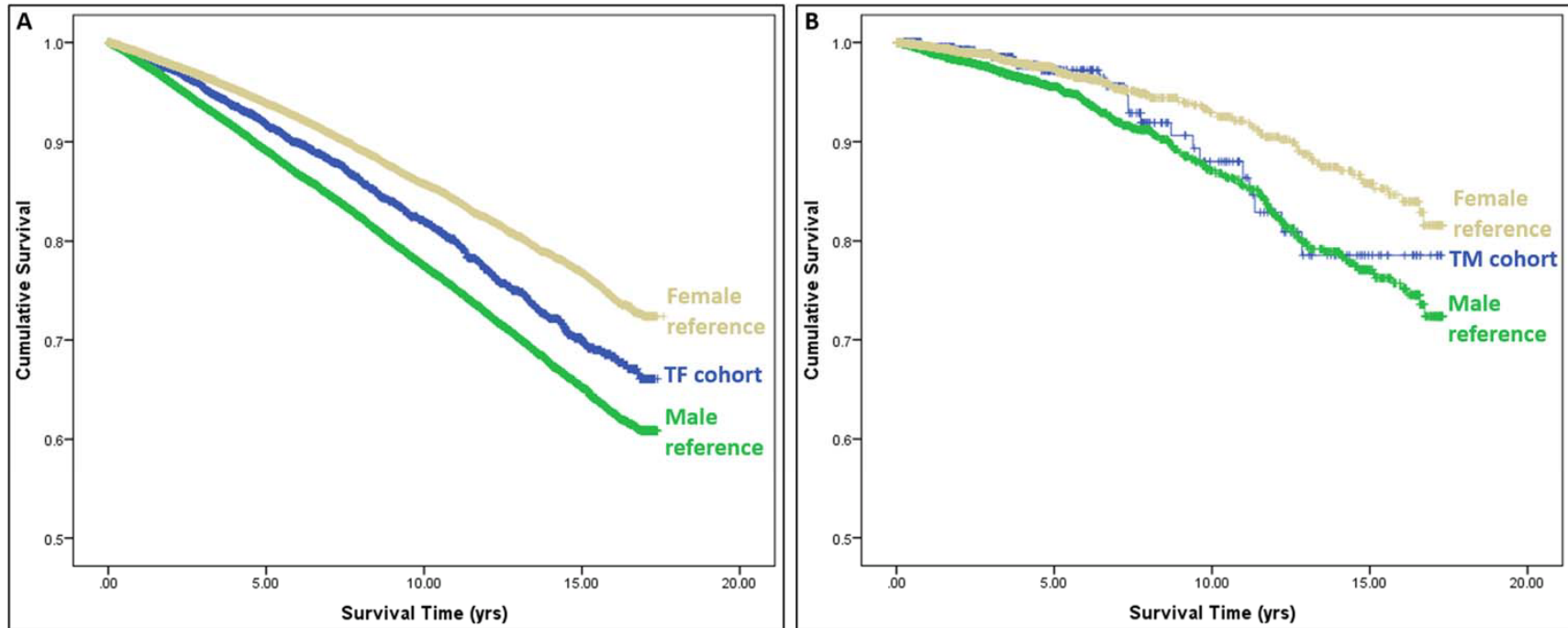
produced similar, but less precise, HR estimates of 0.7 (95% CI, 0.5-1.1) compared with reference males, and 1.3 (95% CI, 0.9-2.1) compared with reference females (Figure 13).

Table 29. Characteristics of the STRONG VA Transgender Cohort

Participant characteristic	TF cohort, n (Col %)	TM cohort, n (Col %)
Age at index date, y		
18-25	90 (2.0)	105 (15)
26-35	425 (9.7)	285 (42)
36-45	710 (16)	130 (19)
46-55	1373 (31)	96 (14)
56-65	1330 (30)	48 (7.1)
>65	466 (11)	14 (2.1)
Year of index date		
2000-2004	1189 (27)	63 (9.3)
2005-2009	784 (18)	55 (8.1)
2010-2013	1099 (25)	163 (24)
2014-2017	1322 (30)	397 (59)
Race/ethnicity		
Non-Hispanic White	3441 (78)	384 (57)
Non-Hispanic Black	287 (6.5)	157 (23)
Hispanic	140 (3.2)	59 (8.7)
Other	160 (3.6)	34 (5.0)
Unknown	366 (8.3)	44 (6.5)
Vital status		
Dead	592 (13)	23 (3.4)
Alive	3802 (87)	655 (97)
Total, n (row %)	4394 (87)	678 (13)

Abbreviations: Col, column; STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; TM, transmasculine; VA, US Department of Veterans Affairs.

Figure 13. Cumulative Survival of TF (A) and TM (B) Cohort Members at the VA Compared With Matched Reference Cohorts



Abbreviations: TF, transfeminine; TM, transmasculine; VA, US Department of Veterans Affairs.

Table 30. Cancer Incidence Rates and Hazard Ratios for TF STRONG VA Cohort Participants Compared With Matched Referent Males and Females^a

Cancer categories ^b	Incidence rate (95% CI)	Adjusted hazard ratio (95% CI)	
	per 100 000 person-years	vs reference males	vs reference females
Any incident cancer (238 cases)	864 (758-987)	1.0 (0.9-1.1)	1.5 (1.3-1.7)
Colorectal cancer (17 cases)	60 (35-96)	1.0 (0.6-1.7)	1.7 (1.0-2.8)
Lung cancer (43 cases)	152 (110-204)	1.1 (0.8-1.5)	1.7 (1.2-2.4)
Melanoma of the skin (17 cases)	60 (35-96)	1.7 (1.0-2.9)	2.7 (1.5-4.7)
Liver cancer (16 cases)	56 (32-92)	1.1 (0.6-1.8)	5.5 (2.8-10.5)
Kidney cancer (11 cases)	39 (19-69)	0.9 (0.5-1.7)	2.3 (1.2-4.5)
Bladder cancers (11 cases)	39 (19-69)	0.8 (0.4-1.5)	3.6 (1.7-7.4)
Prostate cancer – overall (43 cases)	152 (110-205)	0.7 (0.5-0.9)	

Abbreviations: STRONG, Study of Transition, Outcomes and Gender; TF, transfeminine; VA, US Department of Veterans Affairs.

^aExcludes participants with history of cancer before the index date; matched on year of birth, enrollment at index date, race, and care utilization quartile.

^bReported analyses are limited to cancer sites with at least 10 cases.

Following exclusion of participants with prevalent diagnoses, we based our cancer incidence analyses on the data for 4266 TF and 671 TM veterans with a mean survival time of 6.5 and 3.7 years, respectively. The overall cancer incidence (per 100 000 person-years) was 864 (95% CI, 758-987) among TF and 200 (95% CI, 65-468) among TM individuals. The overall cancer incidence among TF individuals was similar to the corresponding rate among reference males (HR, 1.0; 95% CI, 0.9-1.1), but higher than that compared with reference females (HR, 1.5; 95% CI, 1.3-1.7). The overall cancer incidence rate was not significantly different among TM individuals relative to both male (HR, 0.6; 95% CI, 0.2-1.5) and female (HR, 0.8; 95% CI, 0.3-2.0) controls.

Table 30 presents the data on cancer incidence among TF individuals for specific sites with at least 10 cases. Relative to reference females, cancer incidence among TF veterans was elevated for all sites included in the analysis. In contrast, a comparison to reference males demonstrated only 2 notable departures from the null value: TF individuals experienced a 70% higher incidence of melanoma (95% CI, 1.0-2.9) and a 30% lower incidence of prostate cancer (95% CI, 0.5-0.9). To assess the potential effect of different PSA screening uptake, we repeated the analyses for prostate cancer after restricting the cohort to 2306 TF individuals and 14 431 matched reference males who underwent PSA testing before the index date. The result of this analysis was similar (HR, 0.7), but with a wider confidence interval (95% CI, 0.4-1.1).

DISCUSSION

In this report, we describe STRONG, a health system–based observational study designed to examine the health status of transgender people and to evaluate the possible risks and health benefits of various gender-affirming treatments. The STRONG cohort already provided many findings that are expected to inform clinical practice and will enable incorporating much-needed empirical evidence into the treatment guidelines. On the other hand, several important additional analyses were not feasible. In the next sections, we review the practical implications of the observed results, discuss the data limitations and lessons learned, and propose approaches for addressing remaining knowledge gaps.

Decisional Context

The areas of specific concern addressed in this report include the following: (1) the poorly understood risk of acute cardiovascular events including VTE, ischemic stroke, and myocardial infarction, which may be plausibly related to cross-sex hormone therapy; (2) the unknown incidence of cancer in transgender populations; (3) the uncertain burden of mental health morbidity; and (4) the possible, but not well-defined, benefits of gender affirmation therapies. Each of these areas of concern has clinical implications. Better knowledge about the risk of acute cardiovascular events and cancer incidence may inform hormone therapy and follow-up recommendations. The information about mental health should identify specific disease patterns and priorities for management of psychiatric morbidity. The data on quality of life in relation to extent of gender affirmation may aid with decisions regarding coverage for hormonal therapy and surgical procedures.

Study Results in Context

Acute Cardiovascular Events

We observed higher incidences of VTE and ischemic stroke, but not myocardial infarction, among TF individuals compared with cisgender referents of either sex. The difference in incidence for both VTE and ischemic stroke appeared to be particularly pronounced after 6 to 7 years of follow-up and was attributable largely to oral estrogen use.

Although the association between VTE and oral estrogen among TF study participants is in agreement with expectations, the delayed increase in risk is not consistent with risk patterns associated with hormone replacement therapy in clinical trials of postmenopausal women, which form the basis of current recommendations.⁹ The rates for both VTE and stroke in previous trials increased relatively rapidly following initiation of the intervention and then appeared to decline and plateau by 5 years of follow-up.⁸⁵⁻⁸⁸ In contrast, in our estrogen-exposed cohort, the rate of VTE, although clearly diverging from those of matched referents early on, increased most rapidly at 6 years of follow-up. This late inflexion point is also evident in the analyses of ischemic stroke.

Most available data on cardiovascular morbidity in transgender populations come from clinical centers in Europe. Our findings are difficult to compare against the results of these studies because of the differences in design and analytic approach. For example, the authors of a recent Belgian cross-sectional study³⁰ reported that nearly half of VTE cases occurred within the first year of treatment, but given the cross-sectional design, one cannot be certain about the influence of factors that brought patients to the clinic at the time of the evaluation.

Nonetheless, it is perhaps this observation, along with the findings from the Hormone Replacement Therapy trials, that led a recent review to conclude that the rate of VTE among TF persons is “higher in the first year after starting estrogen.”¹³ It is important to keep in mind that, without information on the temporal changes in the denominator, which is not available in cross-sectional studies, conclusions about changes in rate cannot be drawn. For example, more than a third of VTE cases in our estrogen initiation subcohort occurred within 2 years after the first prescription was filled; however, the rates were highest after 6 years of follow-up due to the declining denominator (person-time), as most people included in the cohort were identified in recent years and were followed for a relatively short time.

Cancer Incidence

In both the Kaiser Permanente and the VA data sets we observed that TF people may experience lower risk of prostate cancer compared with male referents. This observation is

unlikely to be explained by differences in PSA screening because the hazard ratio estimate among transgender veterans with PSA testing before the index date was similar to the overall result. The data for TF veterans also demonstrated higher incidence of melanoma, a finding that was not confirmed in the Kaiser Permanente analyses. In the analyses limited to Kaiser Permanente data we found that TF participants had a higher risk of endocrine- and viral infection–induced cancers compared with male referents, as well as a higher risk of lymphatic and hematopoietic cancers compared with female referents.

For TM people included in the Kaiser Permanente data, there was a higher risk of breast cancers as well as smoking- and viral infection–related cancers compared with male referents. The results for smoking-related and viral infection–induced cancers were attributable to the increased incidence of cervical cancers. The VA data included too few TM members to allow cancer site–specific analyses.

Mental Health Problems

Perhaps the most alarming finding in this study is the high prevalence of mental health disorders among transgender people, particularly children and adolescents. This concern is often expressed in the transgender health literature,^{89,90} and is supported in a few small studies^{44,91}; however, to date, no study has been able to document the magnitude of this problem in an unselected group of participants drawn from the general population of a large health care system.

The results of our analyses confirm previous reports indicating that mental health problems of transgender and gender-nonconforming youth are common and, among adolescents, often severe. In the past, studies addressing this issue were conducted mostly in Europe^{39,40,46}; however, more recent data are also available in the United States.

A study of 52 TM and 49 TF patients aged 12 to 24 years who received care for gender dysphoria at a large transgender youth clinic in Los Angeles found that 35% of participants reported symptoms of depression. More than half of participants admitted having thoughts about suicide.⁴²

Another recent study examined prevalence of mental health problems among 298 young TF individuals who participated in an HIV prevention intervention trial conducted in Chicago and Boston. The mental health conditions of interest in that study were ascertained from a brief structured interview. In a subset of 55 participants under the age of 20 years, prevalence estimates for lifetime depression and “suicidality” were 13% and 7%, respectively.⁴³

One previous study used medical record abstraction to determine prevalence of mental health diagnoses among 97 (43 TF and 54 TM) patients aged 4-20 who presented to the Gender Management Service at the Boston Children’s Hospital. Almost half of the patients (44%) presented with significant psychiatric history; 21% had a history of self-mutilation and 9% had a documentation of suicide attempts.⁴⁵

In recent years, several studies have suggested that gender dysphoria may be associated with autism spectrum disorders.⁹²⁻⁹⁴ Perhaps the most widely cited evidence in support of this hypothesis comes from a study of 204 children and adolescents referred to the Gender Identity Clinic in Amsterdam.⁹⁵ Presence of autism spectrum disorder in that study was established via a standardized diagnostic interview⁹⁶; this approach yielded a prevalence estimate of 10% among TF patients (“boys”) and 4% among TM patients (“girls”), which the authors compared with the 1% estimate reported in the general population.

Prevalence of autism spectrum disorder in our study was somewhat lower (7% in TF and 3% in TM individuals across all ages), but we based our case ascertainment on documented diagnostic codes, rather than standardized interviews, and the denominator in our calculations was not limited to children with established gender dysphoria.

With these differences in mind, our results are generally comparable to those reported in the Dutch study; however, it would be premature to view our findings as supporting the specific link between gender nonconformity and autism. It is important to keep in mind that nearly all mental health diagnoses, not just autism spectrum disorders, were more common in our population of transgender and gender-nonconforming youth than in referent children and adolescents.

Especially worrisome are the findings for suicidal ideation and self-inflicted injuries, with prevalence estimate orders of magnitude higher in transgender children and adolescents than in the matched reference groups of the same age. For the most severe cases (ie, those that required hospitalization) the PRs could not be calculated because there were no events among the referents. For nearly all mental health disorders the PRs increased during the time window closest to the index date.

We also found a high burden of mental health conditions among transgender adults. Our analyses demonstrated that adults with keywords as the only evidence of transgender status have a higher prevalence of certain mental health conditions.

Self-Reported Outcome Measures

The analysis of our survey data demonstrated that total transgender congruence and body image, and to a lesser extent passing status measures, were higher among persons who completed their gender affirmation compared with those who received less treatment or no treatment at all. In other studies,^{97,98} the data on quality of life and its relation to gender affirmation therapy are generally sparse and are based on relatively small single-institution studies and few validated instruments.

The results are consistent with our understanding of gender dysphoria as a condition that presents with a high level of body image dissatisfaction.⁹⁹ This distress may be alleviated by receiving interventions aimed at aligning physical appearance with gender identity. Gender confirmation treatments may also increase the level of confidence in passing as a person of the preferred gender. For example, TM individuals taking testosterone experience a redistribution of fat, increased muscle mass, and a deepening of the voice, which promote a more masculine appearance; similarly, TF individuals taking estrogens and antiandrogens experience reduced facial hair growth, an increase in fat deposits around the hips and buttocks, breast growth, and reduced muscle mass, which promote a more feminine appearance.¹⁰⁰ Previous research has underscored the importance of social “passing” for positive body image and body satisfaction, and feelings of passing have been associated with a higher quality of life and self-esteem.¹⁰¹

Evidence suggests that in addition to exacerbating symptoms of gender dysphoria, body image dissatisfaction can lead to secondary health problems among transgender individuals.

For example, a study conducted among 356 German, Swiss, and Austrian participants showed that TM individuals displayed higher degrees of worrisome eating patterns, weight and shape concerns, body dissatisfaction, and body checking than male controls. Available data also indicate that body dissatisfaction and poor body image can predispose individuals to chronic depression, substance use/abuse, and several affective spectrum and somatic disorders.¹⁰² Clearly, body dissatisfaction can lead to significant mental and somatic morbidity in this population, and thus interventions that reduce risk for these conditions, such as gender confirmation therapies, may confirm important and lasting benefits.

It is worth noting that we assessed both transgender congruence and body image, the 2 outcome measures most robustly associated with gender affirmation, using previously validated instruments, and both were shown to be important determinants of psychological well-being and quality of life in transgender people.^{76,103} The passing status variable has not been used previously; we developed it following suggestions from the study stakeholders, and so this variable will require further testing and validation.

Implementation of Study Results

The implementation of the study results depends on the specific analysis. Some of the results may have immediate impact and some will require confirmation.

For example, based on the currently available evidence, the current recommendations for follow-up of TF patients receiving hormone therapy do not emphasize the need for long-term surveillance for stroke and VTE. In view of our results, the existing recommendations may need to be revised, with particular emphasis on long-term vigilance in timely identification and treatment of vascular side effects.

Our findings for cancer highlight the importance of transgender persons receiving age- and natal sex-specific cancer screening and monitoring key risk factors such as smoking and

oncogenic virus infections. The lower risk of prostate cancer among TF patients may be attributable to a protective effect of hormone therapy.¹⁰⁴ On the other hand, it has been hypothesized that prostate cancers that develop despite androgen deprivation may exhibit more aggressive behavior than those diagnosed in cisgender males.¹⁰⁵

The findings for suicidal ideation and self-inflicted injuries among transgender children and adolescents may also have practical implications. Taken together, these data indicate that a child or an adolescent presenting as transgender to a health care provider needs to be urgently evaluated for possible life-threatening mental health comorbidities.

Both Kaiser Permanente and the VA represent pioneering health care systems in the United States in terms of providing transgender health services; yet in many other settings, coverage for gender affirmation, particularly surgery, remains an area of controversy. For example, in 2016 the Centers for Medicare and Medicaid Services (CMS) announced the decision to not issue a National Coverage Determination on gender reassignment surgery for Medicare beneficiaries with gender dysphoria because the clinical evidence was deemed inconclusive. In its decision memo the CMS indicated that it “encourages robust clinical studies that will fill the evidence gaps and help inform which patients are most likely to achieve improved health outcomes with gender reassignment surgery, which types of surgery are most appropriate, and what types of physician criteria and care setting(s) are needed to ensure that patients achieve improved health outcomes.”¹⁰⁶

While our survey should not be considered conclusive due to its relatively small size and cross-sectional design, it demonstrated that total transgender congruence and body image, and to a lesser extent passing status, measures were higher among persons who completed their gender affirmation compared with those who received less treatment or no treatment at all.

Generalizability

We recognize that transgender people enrolled through integrated health care systems such as Kaiser Permanente and the VA represent a cohort of persons with health insurance that may not be representative of the overall transgender population in the United States. Although

the VA cohort included people from across the United States, most of the Kaiser Permanente cohort was located in California. Moreover, most of both cohorts were non-Hispanic Whites. It is expected that some of the results may differ among transgender people in different socioeconomic strata, geographic locations, and race/ethnicity categories. Weighing against this concern is the demonstrated ability to cost-effectively identify a large cohort of transgender participants and referents with a high degree of internal validity.

Another notable consideration when assessing generalizability of the present study results is the increasing prevalence of transgender and gender nonconformity and the shifting patterns of coverage for gender affirmation treatment. Several studies, including ours, have indicated an increase in both the number of people who identify as transgender and in the number of transgender people who seek care. Thus, the external validity of our results may change as the transgender population increases and becomes more heterogeneous. The risk patterns we observe may differ in the future, making a strong case for continued surveillance and research in this growing population.

Subpopulation Considerations

With respect to subpopulation considerations, it is clear that transgender people represent at a minimum 4 very different cohorts: (1) TF individuals who have received gender affirmation therapy; (2) TF individuals who have not yet received or are not planning to receive gender affirmation therapy; (3) TM individuals who have received gender affirmation therapy; and (4) TM individuals who have not yet received or are not planning to receive gender affirmation therapy. The results of these studies should be viewed accordingly. For example, it appears that the prevalence of mental health morbidity in general does not differ by gender identity. On the other hand, risks of VTE and stroke are clearly gender identity and hormone therapy dependent. For all the above reasons, any observations regarding transgender health need to be viewed in the context of the subgroup of interest.

Study Limitations

Although our project demonstrated that it is possible to identify large numbers of transgender participants within integrated health systems such as Kaiser Permanente and VA, it is also clear that validation of study eligibility and accurate ascertainment of TM/TF status require substantial time and resources. The recent US Department of Health and Human Services directive that EMR systems should enable providers to record gender identity and sexual orientation is expected to make this process more efficient; however, it will take some time before gender identity data become widely available. The directive specifically “does not require that a provider collect this information,” but it requires only that the EMR “enable the provider to do so.”¹⁰⁷

One of the main limitations of the available data is the inability to identify persons who initiated or received their transgender care elsewhere. This restricts our ability to identify a subcategory of transgender cohort members with no history of transgender treatment of any kind. Even with the higher-quality Kaiser Permanente data, the most definitive analyses were limited to people who initiated therapy within the system. These individuals were identified as those STRONG participants whose EMR demonstrated a gap between the index date and the first prescription for hormone therapy. This “hormone therapy initiation” group represents about 35% of TM and 32% of TF participants. The broadening of coverage for gender affirmation services at Kaiser Permanente occurred relatively recently. As the proportion of transgender people among enrollees has been increasing and many patients now initiate and receive gender affirmation therapy exclusively within the system, many additional analyses may now be possible.

Although our results demonstrated a strong association of estrogen therapy with VTE and ischemic stroke in the Kaiser Permanente data, many useful subanalyses evaluating risks associated with different types of hormone therapy were not feasible due to sparse drug- and dose-specific strata. It is also not clear if the associations of hormonal therapy with VTE and ischemic stroke differ in HIV-positive and HIV-negative TF persons. HIV infection is a known risk factor for thrombotic events, particularly in combination with oral contraceptive use,¹⁰⁸ and TF

individuals are considered to be a group with high HIV prevalence.¹⁰⁹ The assessment of interaction between HIV and hormone therapy requires a larger cohort because, to date, only 186 TF individuals in our Kaiser Permanente cohort were confirmed as HIV-positive.

Many additional analyses of cardiovascular events will become possible with extended follow-up of the existing cohort. For example, our preliminary analyses indicate that TM individuals receiving testosterone may be at higher risk for myocardial infarction, but the number of events was insufficient due to the relatively young age of the TM cohort.

Another limitation of the available data is the lack of cases representing subcategories of VTE. Particularly important would be to examine the data that are limited to pulmonary embolism, the most severe consequence of venous thrombosis. We were able to only partially address this issue by limiting the analyses to diagnoses that were associated with emergency department visits or hospitalizations (see Appendix 4). If the STRONG cohort is expanded, a separate analysis for pulmonary embolism will be more informative.

Perhaps the most notable limitation of the analyses of cancer incidence is insufficient number of events. This limitation precluded many important comparisons, including cancer incidence by hormone therapy status. Similarly, the small number of events limited our ability to examine site-specific cancer risks. For example, we found some evidence that TF individuals may experience a higher risk of viral infection–induced cancers, but this preliminary finding requires additional cases to allow site-specific analyses.

The limitations related to small study size could be addressed, at least in part, by pooling the Kaiser Permanente and the VA data. Unfortunately, such data pooling is not possible at this time because the VA data could be accessed only remotely via VINCI interface. The challenges related to conducting research at the VA can be minimized if the data requests are initiated long in advance of study initiation, perhaps at the time of the proposal or when a grant application is submitted. Another important lesson learned during implementation of the VA component of the study is the need to have a data use agreement in place. Having such an agreement enables analyses of deidentified data sets using software that is independent of the

VA system; eliminates the need for the VINCI interface; and, perhaps more important, allows pooling of the data with other sources. For example, combining the VA and the Kaiser Permanente cohorts may be possible in the future via a data use agreement between the VA and the STRONG study team.

Another limitation of the available data is the relatively short follow-up time. Most cancers, particularly solid tumors, have very long latency periods, and definitive answers about the presence or absence of the effects of potentially carcinogenic exposures among transgender individuals may require 20 or more years of follow-up.

The main limitation of the analysis of mental health status is its cross-sectional design. The baseline data indicate that transgender and gender-nonconforming youth experience a multitude of mental health problems at the time of initial presentation, but what happens afterward remains unclear. As STRONG cohort follow-up extends, it will be possible to examine the temporal changes in the frequency and severity of these problems, particularly in relation to the age of gender affirmation, an area of considerable uncertainty.¹¹⁰⁻¹¹³

Although the present report addressed several areas of transgender health, our results are unlikely to be affected by the problem of multiple comparisons because different analyses examined completely different research questions. The main concern with multiple comparisons is high likelihood of false-positive results due to simultaneous testing of multiple exposure–outcome associations within the same broad research question. This was not the case in this report with the only possible exception of the analyses that examined prevalence of mental health diagnoses. However, in those analyses all PRs were elevated across all comparisons, indicating the overall high burden of mental health disorders among transgender study participants.

Another methodological issue that deserves discussion is the relatively limited scope of the survey. Due to Kaiser Permanente IRB constraints, we were allowed to contact only cohort members with extensive evidence of transgender-related care. For this reason, the target

population for the survey included only a small proportion of individuals who were considering but had not yet received gender affirmation therapy of any kind.

A more important general limitation pertains to the data of transgender veterans, for whom the available data are more limited than the analyses of the Kaiser Permanente cohort. For example, the use of keyword-containing text strings, which enhanced cohort ascertainment and validation at Kaiser Permanente, was not feasible at the VA. In addition, while TM/TF status was successfully determined in 99% of Kaiser Permanente cohort participants, the proportion of transgender veterans whose natal sex and gender identity remained unknown was much higher (28%). The time restrictions imposed by the VA approval process prevented us from obtaining detailed outcome and gender affirmation information on transgender veterans; however, some of these data will become available in the near future.

Future Research

Although STRONG has already answered many research questions, several important additional analyses can be conducted with the available data. For example, dates and results of laboratory tests including bone scans, blood chemistry analyses, hormone levels, and blood cell counts can be used to conduct longitudinal analyses of the associations between gender affirmation and a variety of health indicators thought to be affected by hormone status. In addition, utilization records can be used to examine how transgender patients adhere to general health care, vaccination, and screening recommendations.

Many important analyses will be possible only if the cohort is expanded. For example, given the observed associations of estrogen therapy with VTE and ischemic stroke (IS), a larger cohort size will allow comparing risks associated with different hormone formulations, routes of administration, and doses. These data are already available, but we could not perform the analyses by specific hormone therapy type due to sparse treatment-specific strata. It is also not clear if the associations of HT with VTE and IS differ in HIV-positive and HIV-negative TF persons. HIV infection is a known risk factor for thrombotic events, particularly in combination with oral contraceptive use,¹⁰⁸ and TF individuals are considered to be a group with high HIV

prevalence.¹⁰⁹ The assessment of interaction between HIV and HT requires a larger cohort because, to date, only 186 TF individuals were confirmed as HIV-positive.

Many additional analyses will become possible with extended follow-up of the existing cohort. A longer follow-up will allow evaluation of relatively rare events, such as deaths due to specific causes, different types of cancer, and other age-related diseases. For example, in the analyses of cancer incidence, we did not have a sufficient number of cases to assess the possible effect of estrogen on risk of breast cancer in TF individuals or the effect of testosterone on risk of ovarian cancer among TM individuals, both areas of concern.³⁴

A critical issue is the long-term health status of transgender youth, particularly as they undergo gender affirmation and enter adulthood. The available baseline data indicate that this group has a high prevalence of life-threatening mental health conditions at the time of initial presentation; however, the temporal changes in the frequency and severity of these problems, particularly in relation to the age of gender affirmation (an area of considerable uncertainty¹¹⁰⁻¹¹³), will require more extended follow-up.

While Kaiser Permanente EMR represent a source of high-quality information, a notable limitation of EMR data is lack of self-reported outcomes. Some of these outcomes can be obtained from surveys; however, as discussed previously (see section G.4), the IRB concerns prevented us from contacting individuals who are considering but have not yet received gender affirmation therapy. In recent years, Kaiser Permanente implemented systematic administration of patient Outcomes Questionnaires, which allow calculating a Global Distress Score (GDS) during mental health and primary care visits. The GDS Outcome Questionnaire incorporates the Patient Health Questionnaire (PHQ-9) and the Generalized Anxiety Disorder scale (GAD-7). By repeatedly administering the questionnaires, Kaiser Permanente providers and patients monitor the level of distress during treatment. The data from the GDS questionnaire and its components, PHQ-9 and GAD-7, have been successfully used in recent Kaiser Permanente studies^{114,115}; these data offer valuable methodological options for evaluating self-reported outcomes of gender affirmation therapy.

Other areas in transgender health research were beyond the scope of this project. For example, the distinction between people who identify gender as binary vs nonbinary is not easily determined in the EMR and assessing the full history of gender affirmation requires self-report. We attempted to address these issues with a survey component; however, the survey was limited by an IRB requirement to include only those participants who had both a validated text and a diagnostic code. Community stakeholders also identified several additional areas of research that we were unable to address in this project. Of particular interest were quality-of-life indicators, HIV, and sexually transmitted infections. Future studies of transgender health should consider addressing these topics.

CONCLUSIONS

Although the body of literature addressing transgender health issues has been growing exponentially,¹¹⁵ limited data are available on the frequency of various specific diagnoses in this population and on the risks and benefits of gender-affirming treatments. An important contribution of STRONG to the extant literature is its relatively large size, which allowed focusing on previously understudied groups such as young children and enabled evaluation of relatively rare events such as stroke, certain cancers, and hospitalizations for mental health conditions. In conducting this study, we performed multiple analyses; some of those analyses provide actionable evidence and some require confirmation and additional research.

We observed higher incidence of VTE and ischemic stroke among TF individuals receiving estrogen compared with cisgender referents of either sex. Contrary to expectations, the observed increases in incidence were most pronounced after 6 to 7 years of treatment initiation. These findings should be taken into consideration during clinical follow-up of TF patients receiving hormone therapy and are likely to be included in the next version of the Standards of Care.

Perhaps the most alarming finding in this study is the high burden of mental health disorders, and especially self-inflicted injuries and suicidal ideation, among transgender children and adolescents. Although our results are in agreement with previous reports, the magnitude of the problem has not been documented on a population scale. From the clinical practice perspective, these data indicate that children and adolescents presenting as transgender or gender nonconforming may require immediate evaluation of mental health needs and implementation of social and educational measures of gender identity support.

The lessons learned while conducting this project will also inform future transgender health research. For example, our findings on the association between extent of gender-affirming therapy and quality of life require confirmation using longitudinal study design. In addition, a much larger cohort of TM and TF individuals and longer follow-up are needed to answer questions about cancer incidence in this population. As the work continues, the project

will allow formulating new previously unexplored research hypotheses and will offer opportunities for additional comparative effectiveness studies.

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The Use of Methodologies in Littman (2018) Is Consistent with the Use of Methodologies in Other Studies Contributing to the Field of Gender Dysphoria Research: Response to Restar (2019)

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Over the past decade, there have been striking changes in the demographics of patients presenting to clinics with gender dysphoria (Aitken et al., 2015; de Graaf, Giovanardi, Zitz, & Carmichael, 2018; Kaltiala et al., 2019; Zucker, 2017).¹ It appears that a new subgroup of gender dysphoric individuals has emerged—a group comprised of predominantly natal female adolescents who did not have evidence of gender dysphoria or significant gender-variant or gender stereotyped nonconforming behaviors prior to puberty (Zucker, 2019). Littman (2018), a descriptive study of parent reports, was the first empirical study of this new subgroup. The findings of Littman raised hypotheses about the potential roles of social influence and psychological mechanisms such as maladaptive coping in the genesis and development of gender dysphoria in this new population. Since publication, several young women who identified as transgender during their adolescence and have since desisted or detransitioned have publicly stated that the phenomenon described in Littman was consistent with their own lived experiences with gender dysphoria, including that social media contributed to their transgender identification (Pique Resilience Project, 2019). Additionally, detransitioners (people who underwent medical and/or surgical transition for gender dysphoria and then detransitioned by stopping medications or having surgery to reverse the changes from transition) have described the roles that trauma (including sexual trauma), homophobia, misogyny, psychiatric conditions, and other psychosocial factors played in their own identification as transgender and belief that transition would be helpful to them (Callahan, 2018; D'Angelo, 2018; Herzog, 2017; Marchiano, 2017).

The publication of Littman (2018) was met with strong and polarized responses, including gratitude from parents of gender dysphoric teens and outrage from some advocates on social media (Jussim, 2019; Wadman, 2018). Some clinicians and researchers have expressed support for the research (Hutchinson, Midgen, & Spiliadis, 2019; Zucker, 2019), while others dismissed the research outright (Wadman, 2018). In some circles, criticism was centered on methodology (Restar, 2019). And although Littman (2018) was merely the first descriptive study into a new area, within three weeks of its publication, the World Professional Association for Transgender Health (WPATH), a large, international, advocacy organization, issued a cautionary position statement about it (WPATH, 2018).

Why has the response been so intense? It seems that the strongest negative responses to the research have come from individuals and organizations who are committed to the gender-affirmative model of care (GAMC). The GAMC (or more precisely the gender identity-affirmative model of care) is an approach where once a person expresses a gender identity, regardless of their age, that identity is validated without delay or questioning why or how they arrived at that conclusion. Then social, medical, and surgical interventions are made available in accordance with several existing protocols (Ehrensaft, 2017; Rafferty, AAP Committee on Psychosocial Aspects of Child and Family Health, AAP Committee on Adolescence, & AAP Section on Lesbian, Gay, Bisexual, and Transgender Health and Wellness, 2018; Wagner, Sackett-Taylor, Hodax, Forcier, & Rafferty, 2019). It is entirely possible that, at its core, the debate about the research presented in Littman (2018) is a debate about the GAMC and not a debate about methodology. I now believe that the potential implications of Littman (2018) (with respect to testing the new hypotheses regarding those with adolescent-onset or young adult-onset gender dysphoria) and the emerging realities of detransitioners' lived experiences have been perceived as threatening to GAMC proponents because they

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¹ See Table 1 for a list of relevant terms and definitions as they are used in this Letter.

Table 1 Relevant terms and definitions

Terms	Definitions
Natal sex, sex	A person's sex that was observed at the time of birth and, if genetic screening or sonogram was performed prenatally, prior to birth
Gender dysphoria and gender incongruence	Gender dysphoria refers to the persistent discomfort from the incongruence between a person's experienced gender identity and their natal sex. The term gender incongruence refers to the difference between experienced gender identity and natal sex but discomfort or distress is not required. Both terms are in use but for the rest of the Letter the term gender dysphoria will be used
Transgender-identified, transgender	An umbrella term describing people who identify as or express any gender identity that is not concordant with their natal sex
Gender stereotype nonconforming (GSNC), gender nonconforming (GNC)	Having the interests, behaviors, aesthetics, personalities, or fashion preferences that do not conform to the stereotypes associated with one's natal sex
Desist	When the symptoms of gender dysphoria resolve and/or a person no longer identifies as transgender. A desister is a person who has desisted
Detransition	When a person who has transitioned by using cross-sex hormones and/or surgery stops the process and either ceases the use of cross-sex hormones and/or has surgery to reverse the changes that occurred from the gender transition. A detransitioner is a person who has detransitioned
Gender identity-affirmative model of care (GIAMC), gender-affirmative model of care (GAMC)	A model of care where the expressed gender identity of a person is affirmed and social, medical, and surgical interventions are made available to them according to several existing protocols

challenge the premises and assumptions that underlie support for widespread use of the GAMC. It is possible that indeed they might be a threat.

Use of the GAMC rests on the following premises and assumptions: It is beneficial for transgender-identified children and teens to be affirmed without delay in the gender identity that they express; identifying as transgender is not a mental disorder; and if psychological or psychiatric issues are present, they are most likely to be secondary to gender incongruence, discrimination, minority stress, or stigma, and not intrinsic to the person (Ehrensaft, 2017; Hidalgo et al., 2013; Lopez, Marinkovic, Eimicke, Rosenthal, & Olshan, 2017; Rafferty et al., 2018; Wagner et al., 2019). It is assumed that the benefits will usually exceed the risks when social, medical, and surgical interventions for gender transition are provided to gender dysphoric individuals and that delaying these interventions will cause harm. The rationale used to assume beneficial outcomes for gender dysphoric teens is based on a study from the Netherlands (de Vries, Steensma, Doreleijers, & Cohen-Kettenis, 2011; de Vries et al., 2014; Hembree et al., 2017). However, the Netherlands study employed a rigorous evaluation process to determine eligibility for treatment and, by design, only included (and is therefore only applicable to) adolescents who had early-onset gender dysphoria and an absence of significant psychopathology at baseline (Delamarre-van de Waal & Cohen-Kettenis, 2006; de Vries et al., 2011, 2014). It is an assumption that applying the treatments (but not the eligibility

criteria) from the Netherlands study to an entirely different population (one with adolescent-onset gender dysphoria and often with significant psychiatric co-morbidities) will result in the same outcomes achieved in the Netherlands. Furthermore, the current recommendations for treating adolescents with puberty blockers, cross-sex hormones, and surgery are acknowledged to be derived from low-quality and very-low-quality evidence (Hembree et al., 2017), and therefore current treatment recommendations may be quite vulnerable to challenges arising from new research.

The findings of Littman (2018) directly challenge many of the assumptions that underlie support for the GAMC. Consider the possibility of the following being confirmed by future research. If what has preliminarily been referred to as rapid onset gender dysphoria (ROGD) represents a new developmental pathway to gender dysphoria and transgender identification, one where psychosocial factors including social influence, trauma, homophobia, maladaptive coping mechanisms, and psychiatric disorders are contributing factors or even causal to identifying as transgender, it would disprove the premise that psychological issues can only be responses to negative experiences, not intrinsic to the process. If it is confirmed that one population of gender dysphoric individuals is harmed by approaches that affirm gender identity without questioning and benefits from extended clinical assessment (Clarke & Spiliadis, 2019) and a gender exploratory model (GEM) approach (Spiliadis, 2019), the evaluation process for gender dysphoric

patients would become far more complex. If it is confirmed that there is a population of gender dysphoric individuals for whom the risks of social, medical, and surgical transition usually exceed the benefits, it would undermine another GAMC assumption. In order to avoid the iatrogenic harms of misdiagnosis, failure to treat psychiatric conditions, and distress regarding permanent effects of medical and surgical interventions, the GAMC would need to be reconsidered to expand the evaluation process to determine which developmental pathway of gender dysphoria has occurred, whether the patient's gender dysphoria might be secondary to another condition (such as experiencing trauma, homophobia, misogyny, psychiatric conditions, or social influence), and whether the patient is likely to be helped or harmed by each of the interventions (social, medical, surgical) before proceeding.

This Letter is in response to Restar (2019). Before detailing my disagreements, it is worth highlighting what I take to be our common ground. I believe that people identifying as transgender exist, deserve basic human rights and dignity, and have faced substantial historical mistreatment that continues to this day. I also believe that it is inappropriate to apply the findings in Littman (2018) to all people experiencing gender dysphoria or to deny that social, medical, and surgical interventions for the purpose of gender transition are beneficial for some people who experience gender dysphoria. Arguments to the contrary reveal a misunderstanding of the results and caveats presented in Littman. Nevertheless, Restar (2019) contains numerous misrepresentations of Littman. Rather than engaging in a comprehensive point-by-point rebuttal, however, I refer interested readers back to the primary sources for clarification (Littman, 2018, 2019). Instead, I will focus my comments on two points that I think are essential. First, I want to respond to some of the methodological concerns raised in Restar. Specifically, I will argue that the methodologies used in Littman (2018) are not unique to that work and are instead in common use and considered acceptable in studies that are used to support the GAMC and in studies that do not challenge the GAMC. Second, I want to provide some new information, requested in Restar, that did not appear in the published article due to length considerations. Restar intimated that the information was withheld because it concealed information that contradicted the thesis of Littman (2018). In fact, the information was consistent with the presented results.

Side-by-Side Comparisons of Methodology Use

The methodologies singled out for criticism in Littman (2018)—parent-report, targeted recruitment, convenience samples, online and anonymous surveys—are used in research that supports or is otherwise in line with the GAMC and appear to be considered perfectly acceptable in that context (e.g., Dickey, Reisner, & Juntunen, 2015; Olson, Durwood, Demeules,

& McLaughlin, 2016; Riggs & Bartholomaeus, 2018; Riley, Clemson, Sitharthan, & Diamond, 2013; Riley, Sitharthan, Clemson, & Diamond, 2011; Russell, Pollitt, Li, & Grossman, 2018; Tebbe & Moradi, 2016; Timmins, Rimes, & Rahman, 2017). Table 2 lists eight articles that have been published in reputable journals, have been subsequently cited in the literature, and share methodologies with those criticized in Littman. Some have been used explicitly as reasons that the medical community should adopt the GAMC (Olson et al., 2016; Russell et al., 2018). I have selected these articles not to suggest that they should be dismissed, but rather to make the point that these articles contribute to our understanding and that none of the limitations noted are grounds to disqualify the research articles out of hand. The following section is a side-by-side comparison of selected methodologies which allows for the consistent, non-preferential application of standards to these research articles. Note that the original version of Littman (2018), before revision, is included as supplemental information in Littman (2019). For clarity, the versions will be referred to as Littman (2018) (current) and Littman (2019) (original).²

Parent Report

The use of parent report to collect data about children's mental and physical health is a well-established method of research (Child and Adolescent Health Measurement Initiative, 2018). Collecting data by parent report has the advantages that data are collected from adults who are knowledgeable about the child, able and willing to complete detailed surveys, and can provide details that are not available by other methods. Limitations of parental report include that the information is second hand and may be incomplete and carries the risk of parental biases. The way that parent-report studies are usually handled in the literature is that the method section will include details indicating that the data were collected from parents and the discussion section will acknowledge the limitations of this method. Table 3 compares three studies of parent report with Littman (2018). Compared to Olson et al. (2016), Littman (2019) (original), Littman (2018) (current), and Riley et al. (2011) provide greater emphasis that the study employed parent report for data collection. Compared to Olson et al. (2016) and Riley et al. (2011), Littman (2019) (original) and Littman (2018) (current) provided greater focus on the limitations of parent report. Additionally, with the purpose of adding more emphasis on

² When the article was revised after publication, PLoS ONE replaced the original version with the revised version, maintaining the same doi number. So, the revised version is the version of record and has an August 2018 publication date. The correction notice was published in March 2019. For transparency, the originally published version was made available as supporting information (in an attachment) to the correction notice. Thus, the current, revised version is Littman (2018) and the original version is Littman (2019) in the supporting information.

Table 2 List of articles for comparison

References	Title	Journal	Google scholar cited by #
Olson et al. (2016)	Mental health of transgender children who are supported in their identities	Pediatrics	301
Russell et al. (2018)	Chosen name use is linked to reduced depressive symptoms, suicidal ideation, and suicidal behavior among transgender youth	Journal of Adolescent Health	37
Dickey et al. (2015)	Non-suicidal self-injury in a large online sample of transgender adults	Professional Psychology: Research and Practice	42
Riggs and Bartholomaeus (2018)	Fertility preservation decision making amongst Australian transgender and non-binary adults	Reproductive Health	4
Riley et al. (2011)	The needs of gender variant children and their parents: A parent survey	International Journal of Sexual Health	69
Riley et al. (2013)	Surviving a gender-variant childhood: The views of transgender adults on the needs of gender-variant children and their parents	Journal of Sex and Marital Therapy	67
Tebbe and Moradi (2016)	Suicide risk in trans populations: An application of minority stress theory	Journal of Counseling Psychology	96
Timmins et al. (2017)	Minority stressors and psychological distress in transgender individuals	Psychology of Sexual Orientation and Gender Diversity	27

Table 3 Parent report

References	Methods section indicates parent report	Title indicates parent report	Conclusion indicates parent report	Limitations of parent report are acknowledged
Olson et al. (2016)	Yes	No	No	Yes. Two sentences
Riley et al. (2011)	Yes	Yes	Yes	No. The limitations of parent report as a method are not specifically acknowledged
Littman (2019) (original)	Yes	Yes	No	Yes. Seven sentences
Littman (2018) (current)	Yes	Yes	Yes	Yes. Seven sentences plus 12 more sentences in an accompanying Correction notice (Littman 2019)

the use and limitations of parent report in Littman (2018), a correction notice was issued (Littman, 2019), which added 12 more sentences pertaining to the use and limitations of parent report to the existing seven sentences. Regarding the standards for reporting the use and limitations of parent report in research, Littman (2018) (current) and Littman (2019) (original) met and exceeded the standards applied to other parent-report studies.

Recruitment Methods and Convenience Samples

The use of targeted recruitment and convenience samples has the advantage of connecting with hard-to-reach populations but introduces limitations associated with selection bias. Depending on the targets and methods of recruitment, there is risk that the respondents might be ideologically similar or similar in other ways that could limit the generalizability of the findings. Customarily, this concern is addressed in research articles by acknowledging the risk and noting that there are limits

to generalizability. Ideally, information about recruitment is detailed enough to consider how likely or unlikely it is to lead to participants who are similar in some way. Table 4 includes comparisons of seven articles with Littman (2018) (current) and Littman (2019) (original) on the topics of: how specific the information was about recruitment; how likely the participants are to have ideological similarities; and whether the limitations have been acknowledged in terms of recruitment methods, self-selection, or generalizability.

Littman (2018) (current) and Littman (2019) (original) provided the most specific information about recruitment sites, including the names of targeted Web sites. Littman (2018) (current) additionally provided paragraph-long descriptions of each site known to have hosted recruitment information and referenced links to digitally archived screenshots of the sites from the period of time that recruitment took place. In contrast, most of the articles in Table 4 were vague about the specific groups and Web sites targeted and none provided the names

Table 4 Targeted recruitment, convenience samples

References	Specificity of detail to determine ideological or other similarities	Likelihood of ideological or other similarities among participants	Acknowledged limitations regarding recruitment, self-selection, or generalizability
Olson et al. (2016)	Limited specificity. Groups, conferences, and websites not named. Wording: "support groups, conferences, a website advertised via media stories and word of mouth"	Likely to have some ideological homogeneity as social transition was not recommended at the time of recruitment and sites were related to support groups and conferences on this topic	Yes
Russell et al. (2018)	Very limited specificity. Recruitment sites, groups not named. Wording: "Data come from a community cohort sample of lesbian, gay, bisexual, transgender, and queer youth, and youth with same sex attractions, recruited in three US cities (one each in the Northeast, the Southwest, and the West Coast)..." Acknowledgments section of the article mentions "... site coordinators, staff of the community organizations, and leaders of college groups who cooperated in recruiting participants"	Unknown	No
Dickey et al. (2015)	Limited specificity. Social media groups, clinics, specialists, and conferences not named. General terms used in wording: "Yahoo! Groups and Facebook," "Yahoo! Groups relevant to TGNC community," "gender clinics and specialists," and "four conferences for the TGNC community"	Unknown	Yes
Riggs and Bartholomaeus (2018)	Limited specificity. Organizations and groups were not named. Wording: "...Australian organizations and groups made up of and/or working with people who are transgender or non-binary, including broader 'LGBT' organizations"	Unknown	Yes
Riley et al. (2011)	Mixed specificity. Some publications and newspapers were named. Websites and radio programs were not named. WPATH listservs and conference proceedings were named. Wording: "...targeted various publications (e.g., <i>Sydney's Child</i> , <i>Polare</i>), newspaper articles (<i>Sydney Star Observer</i> , <i>Sydney Morning Herald</i>), websites, radio programs, and in international Listserv and conference proceedings of the World Professional Association for Transgender Health"	Participants recruited from WPATH listservs and conference proceedings are likely to be ideologically similar. It is possible to check the likelihood of ideological similarity of the named publications. Cannot tell likelihood of ideological similarities from unnamed sources	Yes
Tebbe and Moradi (2016)	Limited specificity. Sites and online communities not named. Wording: "...online social networking venues and groups (e.g. Reddit, Facebook, email list servs) for trans individuals." Plus outreach to "online communities of racial and ethnic minority populations and trans people of color specifically"	Unknown	Yes

Table 4 (continued)

References	Specificity of detail to determine ideological or other similarities	Likelihood of ideological or other similarities among participants	Acknowledged limitations regarding recruitment, self-selection, or generalizability
Timmins et al. (2017)	Limited specificity. Websites, forums, listservs not named. Wording: "via advertisements on online press Websites aimed at the lesbian, gay, bisexual, transgender, and other gender and sexual minority (LGBT+) community, posts on targeted and general Internet forums, Listservs, mailing lists, and sections on social media sites, and snowball sampling"	Unknown	Yes
Littman (2019) (original)	Specific details including the names of the websites hosting recruitment information. Wording: "placed on three websites where parents and professionals had been observed to describe rapid onset of gender dysphoria (4thwavenow, Transgender Trend, and Youth Transcritical Professionals)" plus snowball sampling	Likely to have some ideologically homogeneity	Yes
Littman (2018) (current)	Very specific details including names of websites and section describing each known site of recruitment. The specific details included links to digitally archived screenshots of the sites from the period of time that the recruitment took place	Four groups likely to represent contrasting ideologies	Yes

of the Web sites used for recruitment. The participants from Olson et al. (2016) and Littman (2019) (original) were likely to have ideological similarities with others in their respective samples. However, most of the other articles did not provide enough information to determine how likely or unlikely it was that participants were ideologically homogenous. Additionally, Littman (2018) (current) documented recruitment from sites with contrasting ideologies. Non-representativeness of samples in terms of sex, race/ethnicity, education, income, age of social transition, and sexual orientation are noted in Olson et al. (2016), Dickey et al. (2015), Riley et al. (2011), Tebbe and Moradi (2016), and Littman (2018). Regarding documenting the use of targeted recruitment and convenience samples, providing details about recruitment sources, and acknowledging limitations regarding recruitment, self-selection, or generalizability, Littman (2018) (current) and Littman (2019) (original) met and exceeded the standards applied in other studies.

Author-Created Survey Questions

It is not uncommon for researchers to create new survey questions or adapt existing measures for use when exploring a topic. When this occurs, there may be a statement that the questions were created with feedback from other professionals, that they were tested with members of the target population, or that they were tested for internal reliability or validity. Although this information was not included in Littman (2018), the development of the survey instrument was conducted with the feedback from four members of the target population for content and clarity. Of the six research articles in Table 5, one article, Tebbe and Moradi (2016), employed all three processes; Riley et al. (2013) employed two processes; Riley et al. (2011), Timmins et al. (2017), and Littman (2018) employed one process. Although Riggs and Bartholomaeus (2018) did not employ feedback from other professionals, one author created the survey and the other provided feedback. Overall, the evaluation of author-created research questions in Littman (2018) is within the range of other articles in this literature, although it is on the lighter side.

Online Surveys

Online surveys are becoming increasingly common likely due to their broad reach and relative low expense. Researchers choose to collect or not collect IP addresses in online surveys based on the specifics of the research topic and the degree to which they are guaranteeing the anonymity of the participants. Providing anonymity to participants by not tracking IP addresses has an advantage for topics that are stigmatizing in that the anonymity can allow participants to be more honest in their responses. It introduces the limitation that the researcher cannot verify the identity and experiences of the participants or remove potential duplicate surveys. Table 6 summarizes how seven research articles managed the use of IP addresses.

Table 5 Author-created questions

Article	Feedback from other professionals	Feedback from target population	Testing of internal validity or reliability
Riggs and Bartholomaeus (2018)	Other (survey questions were written by one author, feedback provided by other author)	No	No
Riley et al. (2011)	Yes, 3 professionals	No	No
Riley et al. (2013)	Yes, number not provided	Yes, number not provided	No
Tebbe and Moradi (2016)	Yes, 2 researchers	Yes, 3 members of the target population	Yes
Timmins et al. (2017)	No	No	Yes
Littman (2018)	No	Yes, four members of the target population	No

Littman (2018) was not notably different in this regard from other research articles in the field.

Burden of Memory for Recall

When asking participants to recall events that occurred many years prior to the completion of a survey, one concern is whether it is likely to tax their memory. The vast majority of the survey questions in Littman (2018) pertained to the period of time around the adolescent and young adult (AYA) announcing a transgender identification to the time of survey completion which was, on average, 15 months (median, 11 months). However, there are several questions that asked parents to recall events that occurred earlier in childhood (range of AYA ages were 11–27 years). Table 7 compares the maximum burden of memory for several articles in the field. The burden of memory asked of the participants in Littman (2018) is not outside the boundaries of other research in this literature.

Provision of Consent and Full Survey Instrument

The practice of including the consent and full survey instrument as part of the publication is rare. Littman (2018) is the only article in Table 8 for which either was provided. Restar (2019) raised concerns about the wording of the consent and that not all questions in the survey instrument were used in the publication. It is impossible to tell whether a similar critique could be made of the other papers because their consent and survey instruments are not readily available. The concern that the wording of the consent may have led to self-selection in survey sample is valid. Nevertheless, limits to generalizability due to recruitment methods had already been acknowledged in the research article.

No study is perfect—all methods have strengths and limitations. Researchers should make every effort to design studies to minimize limitations and maximize strengths. Exploratory descriptive research, like Littman (2018), is less definitive than other designs. Nevertheless, such work plays an important role

in assessing essential attributes that will come to define new areas of study and lays the groundwork necessary for subsequent research to confirm or disconfirm the findings. The detailed side-by-side comparisons in this Letter demonstrate that the use of research methods in Littman (2018) was consonant with the use of research methods in other research articles contributing to the field of gender dysphoria research. It would be logically consistent to take the position that all studies that use imperfect or limited methodologies should be erased from the literature. I prefer to acknowledge the formative power of this kind of work and respect the contributions made by Olson et al. (2016), Russell et al. (2018), Dickey et al. (2015), Riggs and Bartholomaeus (2018), Riley et al. (2011, 2013), Tebbe and Moradi (2016), Timmins et al. (2017), and Littman (2018) and believe that they can be appreciated even while we remain aware of the shortcomings of their selected methodologies.

Additional Information

Restar (2019) inquired about the rationale and justification for survey questions and responses that did not appear in Littman (2018). I will take this opportunity to share some information that, due to length considerations, was not included in the paper.

Gender and Sexual Minority-Related Attitude Items

To obtain information about participant attitudes toward the rights of LGBT individuals, I included four questions in the survey where the same or similar questions have appeared in national polls (Jones & Cox, 2011; Jones, Cox, Cooper, & Lienesch, 2017; Pew Research Center for the People and the Press, 2011). The results from all four questions showed that the participants in my study supported the rights of people who are LGBT at similar or higher levels than participants in national U.S. samples. For the article, I chose to report on two questions rather than all four because including the additional questions added minimal value while increasing the length of the paper. Between the two questions concerning transgender people, I selected the question where the wording and content of the

Table 6 Online surveys

References	IP address tracking	Duplicate IP address management
Dickey et al. (2015)	IP addresses were not tracked	N/A
Riggs and Bartholomaeus (2018)	IP addresses were not tracked	N/A
Riley et al. (2011)	Did not mention tracking or not tracking IP addresses	Not mentioned
Riley et al. (2013)	Did not mention tracking or not tracking IP addresses	Not mentioned
Tebbe and Moradi (2016)	IP addresses were tracked	Four surveys removed due to duplicate IP addresses
Timmins et al. (2017)	Did not mention tracking or not tracking IP addresses	Not mentioned
Littman (2018)	IP addresses were not tracked	N/A

Table 7 Memory burden

References	Nature of questions	Maximum memory recall burden
Dickey et al. (2015)	Exploring NSSI occurrences over the course of participants' lifetime	> 54.3 years (mean age of participants was 40.4 years with a SD of 13.9)
Riley et al. (2011)	Exploring the needs of gender-variant children and the needs of their parents	25+ years (children were between the ages of 0 and 25+; 84% of the children were aged 18 and younger)
Riley et al. (2013)	Exploring the childhoods of transgender adults	66+ years (44% of participants were aged 45 and younger; 96% were aged 65 and younger)
Timmins et al. (2017)	Exploring a lifetime of experiences	78 years (mean age of participants was 28.5 years with a range of 16–78 years)
Littman (2018)	Exploring parent reports of events over an adolescent or young adult's (AYA) lifetime though most questions explore the time when the child became transgender-identified to the present	27 years (mean age of the AYA was 16.4 with a range of 11–27 years; duration of time since announcement of transgender identification was 15 months [mean] and 11 months [median])

question were closer to the wording and content of the question used in the national surveys. Between the two questions concerning gay and lesbian couples, I selected the question that could be reported more concisely. Table 9 shows the results of all four questions along with comparisons to responses in national samples. The responses to all four questions tell a consistent story—in terms of overall LGBT attitudes, the sample of participants in Littman (2018) was similar or stronger in their support of LGBT rights than participants in U.S. national samples.

Parents with More Than One Child with a Sudden or Rapid Onset of Their Gender Dysphoria

Restar (2019) raised concern about multiple participants completing multiple surveys specifically regarding the instruction that parents who had more than one child exhibiting a sudden onset of gender dysphoria should complete one survey per child. Requesting separate responses for separate children made it easier to document the details of each child individually. However, it also meant that responses were not statistically independent—some parents' perspectives could be overrepresented in the data. In total, eight (3.1%) of the 256 parent-respondents indicated that they had more than one child

Table 8 Provision of consent and full survey instrument

References	Survey instrument provided	Consent provided
Olson et al. (2016)	No	No
Russell et al. (2018)	No	No
Dickey et al. (2015)	No	No
Riggs and Bartholomaeus (2018)	No	No
Riley et al. (2011)	No	No
Riley et al. (2013)	No	No
Tebbe and Moradi (2016)	No	No
Timmins et al. (2017)	No	No
Littman (2018)	Yes	Yes

experiencing a sudden or rapid onset of gender dysphoria. A review of the personal characteristics of those eight respondents (age, sex, race/ethnicity, highest educational degree, country and/or US region of residence, etc.) determined that no two of the eight had the same constellation of personal characteristics. Therefore, it appears that those with two or more children did not, in fact, complete the survey more than once, and thus, none of these parents were multiply represented in the data.

Table 9 Gender and sexual minority-related attitude items

Question wording	Participants in Littman (2018) sample (%)	Participants in national samples (%)	Comparison
<p>Do you believe that transgender people deserve the same rights and protections as other individuals in your country?</p> <p>For Jones and Cox (2011), results were reported as "...agree that transgender people should have the same rights and protections as other Americans"</p>	<p>Yes 88.2% No 3.1% Don't know 7.8% Other 0.8%</p>	<p>Agree 89% (Jones & Cox, 2011)</p>	<p>Participants in Littman (2018) and a U.S. national sample (Jones & Cox, 2011) had similar levels of support for the rights and protections of transgender people</p>
<p>Would you support or oppose a law to protect transgender people from discrimination in employment and housing? (Littman, 2018)</p> <p>Do you favor or oppose laws that would protect gay, lesbian, bisexual, and transgender people against discrimination in jobs, public accommodations, and housing? (Jones, Cox, Cooper, & Lienesch, 2017)</p>	<p>Support 83% Oppose 3.5% Don't know 9.0% Other 4.3%</p>	<p>Favor 70% Oppose 26% Don't know/refused 5% (Jones, Cox, Cooper, & Lienesch, 2017)</p>	<p>The percentage of respondents in Littman (2018) indicating that they would support a law to protect transgender people from discrimination was higher than the percentage of respondents in a national sample (Jones, Cox, Cooper, & Lienesch, 2017) indicating that they would support laws to protect LGBT people against discrimination</p>
<p>Do you strongly favor, favor, oppose, or strongly oppose allowing gay and lesbian couples to marry legally?</p> <p>Same options and wording for Jones, Cox, Cooper, and Lienesch (2017) and Pew Research Center for the People and the Press (2011)</p>	<p>Favor 85.9% Oppose 7.4% Don't know 6.6%</p>	<p>Favor 45% Oppose 46% Don't know/refused 9% (Pew Research Center for the People and the Press, 2011) Favor 63% Oppose 34% Don't know/refused 4% (Jones, Cox, Cooper, & Lienesch, 2017)</p>	<p>Compared to two U.S. national surveys (Pew Research Center for the People and the Press, 2011; Jones, Cox, Cooper, & Lienesch, 2017), a higher percentage of respondents from Littman (2018) favored allowing gay and lesbian couples to marry legally</p>
<p>More gay and lesbian couples raising children is ___ for society? (options: good thing, bad thing, does not make much difference, don't know)</p>	<p>Good 42.1% Does not make much difference 39.0% Bad 8.3% Don't know 10.6%</p>	<p>Good 14% Does not make much difference 48% Bad 35% Don't know/refused 3% (Pew Research Center for the People and the Press, 2011)</p>	<p>Compared to a national survey (Pew Research Center for the People and the Press, 2011), higher percentages of respondents in Littman (2018) indicated that more gay and lesbian couples raising children is a "good thing" and lower percentages indicated it was a "bad thing"</p>

The questions that were reported in Littman (2018) are in bold

Conclusion

Side-by-side comparisons demonstrate that the use of methodologies in Littman (2018) was consistent with those used elsewhere in the gender dysphoria research literature. It is plausible that the heated debate over the publication of Littman is less about the specifics of the methodology and more about the perception of the study's findings as a threat to the continued use of the GAMC. The appropriate next steps to determine whether the hypotheses regarding psychosocial factors contributing to the development of gender dysphoria can be confirmed should be well-documented case reports and research that collects data first-hand from individuals who experienced gender dysphoria themselves. If the hypotheses are confirmed, thoughtful and respectful debate that prioritizes the long-term health and well-being of all individuals who experience gender dysphoria over the desire to defend the continued use of the GAMC should ensue.

Going forward, in order to promote the long-term health and well-being of all people who experience gender dysphoria (not only those who might benefit from the GAMC approach), we need a comprehensive understanding of gender dysphoria and transgender identification. Therefore, research is needed to explore: the multiple developmental pathways to gender dysphoria and transgender identification; the trajectories of gender dysphoria and transgender identification including desistance and persistence; the myriad of outcomes from social, medical, and surgical transition (including positive, negative, and mixed outcomes); and the role of exploratory psychotherapies that are neither gender identity-affirmative nor gender identity-reparative. The development and testing of approaches that are exploratory and emotional growth-affirmative, healthy development-affirmative, and whole-person/positive mental health-affirmative may ultimately provide reasonable alternatives to approaches that are gender identity-affirmative. And finally, until there are long-term studies of individuals with adolescent-onset and young adult-onset gender dysphoria to determine their rates of desistance and persistence and the risks, benefits, and alternatives to specific interventions, patients and their families deserve honest and accurate counseling about the lack of evidence to support current treatment options for them.

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Compliance with Ethical Standards

Conflict of interest The author declares that she has no conflict of interest.

Ethical Approval This Letter does not contain any studies with human participants performed by the author.

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As Gov. Ron DeSantis (R) signed the bill, he pointed to a case in Leon County, where January Littlejohn and her husband are suing the public school system for what they alleged was concealing information about their 13-year-old's gender-identity transition, violating their rights as parents and harming their relationship with the teen. A spokesman for the school system did not return calls, but the superintendent has said that the situation was misrepresented and that the district was following instructions from Littlejohn.

More recently, the school board in Leon County voted in late June to turn a spotlight on transgender students — mandating that all families be informed when “a student who is open about their gender identity” is part of a PE class or on an overnight trip, in case other parents want to remove their children.

In Virginia's Shenandoah Valley, public schools in the college town of Harrisonburg are among the most recent legal battle ground. School officials there keep student gender transitions confidential and say that students' gender identities should be affirmed, according to a staff presentation last October. “The ultimate goal is to help a student safely come out to their parents with support from trusted adults,” the presentation said.

But a lawsuit brought in June by six parents and teachers — all said to be practicing Christians who believe “each of us is born with a fixed biological sex that is a gift from God” — argues that the district's practices usurp parents' rights, violate free speech protections and force school employees to go against their religious faith. “Public schools should never hide information from or lie to parents about a child's mental health,” the complaint, filed by ADF, begins. “And schools should never compel teachers to perpetrate such a deception.”

In a publicly posted exchange of letters between ADF and the school system, Superintendent Michael Richards said he had not received complaints in line with what lawyers presented and was not inclined to support rescinding a practice “that offers support and resources to some of our most vulnerable students and their families.” The district uses “a team approach” to address student and family needs case by case, he said.

Earlier, 14 parents working with the conservative Wisconsin Institute for Law and Liberty and ADF, sued schools in Madison, Wis., over guidelines that allow students to adopt gender-affirming names and pronouns without telling parents.

For schools, approaches vary

To support those transitioning socially at school, some school systems create a “gender support plan” that outlines how a student's situation will be handled — with details about restrooms, extracurricular activities, trusted adults and privacy.

But school systems take different approaches, and some practices evolve.

In Colorado's Jeffco School District, outside of Denver, officials honor names and pronouns that align with students' gender identities. But the 69,000-student system brings parents into the conversation as a way to support students, said spokeswoman Kimberly Eloie, pointing out there is no real privacy in place if people are using new names and pronouns in school.

In Maryland's largest school system, parent involvement is ideal but not required. “Under the guidelines, we do support the student,” said Gregory Edmundson, director of student welfare and compliance in Montgomery County, with 159,000 students.

“If they are not out to their families, then we honor and respect that,” he said. “It’s not about trying to keep secrets. It’s about us trying to keep kids safe.”

In the last three years, 350 to 400 Montgomery County students have completed gender identity support plans to change names and pronouns to match their gender identity, Edmundson said. One question asks the student to rate their parents’ support level, from a low of 1 to a high of 10.

Montgomery County is being sued, too. Lawyer Frederick W. Claybrook Jr., who is listed on the complaint with the Christian conservative National Legal Foundation and an attorney based in the county, took the school system to court in 2020 on behalf of three parents.

“Parents should be in the loop on this kind of decision,” Claybrook said. “The fact that they aren’t doesn’t even allow them to help their children get professional care, which might well be very supportive of their transitional choice. But this is a difficult decision that can have some very life-changing effects — and parents are principally in charge of helping their children through those types of situations.”

Mark Eckstein, an LGBTQ advocate and father of two in the Maryland school system, said he understands that parents would not want to be excluded. And since parent notification rests on how supportive parents are, he asks: How does that get measured? Still, he maintains that the safety of the child outweighs the need of the parent to know. But the goal, he said, is to include everyone.

“This is not us against them,” he said. “We have to all come together to support these issues because they’re not easy, they’re complicated.”

For a mother of three living outside Seattle — historically liberal in her politics — the complications began when her child was in fifth grade. One day she opened an email from a teacher and did not recognize the student’s name. At first she thought the teacher had sent it to the wrong parent.

She soon realized it was her daughter. The fifth-grader had taken on a new name and male pronouns in school. “I feel like they lied to us by omission,” the mother said, speaking on the condition of anonymity to protect her child’s privacy.

The experience led to a couple years of home-schooling, which coincided with the pandemic. She says her daughter now identifies again as a girl. The mother said she was not bothered by the child thinking through issues of sex and gender. “A lot of us tried on different identities when we were young,” she said. But being transgender could eventually lead to medical treatment, she said, and “once a kid says this, there is the automatic assumption that it has to be true.” Even more, “they are protecting children from parents without ever giving us a chance to be supportive.”

“They call us if they’re going to give our kids a Tylenol or if they have a scratch, but not with this?” she said.

Baetsen, who came out to their Maryland teacher while in eighth grade, said it is important that schools make sure not to out students. Baetsen finally told their parents in ninth grade, finding their parents were “very, very supportive,” asking questions but understanding. “You don’t know how people are going to react,” Baetsen said.